

Old American Zinc Plant Superfund Site
Fairmont City, St. Clair County, Illinois
Surrounding Properties Remedial Design
WA No. 224-RDRD-B5A1/Contract No. EP-S5-06-01

Parts of this document have been redacted to protect personally identifiable information.

Prepared for



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Acronyms and Abbreviations

AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirements
bgs	below ground surface
BMP	best management practice
BODR	basis of design report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CH2M	CH2M HILL, Inc.
COC	contaminant of concern
CQAP	construction quality assurance plan
EPA	U.S. Environmental Protection Agency
FA	facility area
FS	feasibility study
IDOT	Illinois Department of Transportation
IEPA	Illinois Environmental Protection Agency
ILCS	Illinois Compiled Statutes
mg/m ³	milligrams per cubic meter
mg/kg	milligrams per kilograms
NPDES	National Pollutant Discharge Elimination System
OAZ	Old American Zinc
PCG	preliminary cleanup goal
PRP	potentially responsible party
RA	remedial action
RD	remedial design
RI	remedial investigation
ROD	Record of Decision
SESC	Soil Erosion and Sedimentation Control
SWAC	surface-weighted average concentration
SWPPP	stormwater pollution prevention plan
TCL	target compound list
TCRA	Time-Critical Removal Action
XTRA	XTRA Intermodal, Inc.

Introduction

The U.S. Environmental Protection Agency (EPA) contracted CH2M HILL, Inc. (CH2M; engineer) to prepare the remedial design (RD) for the surrounding properties near the Old American Zinc (OAZ) Plant Superfund Site, consistent with the Record of Decision (ROD) (EPA 2012). This prefinal basis of design report (BODR) was prepared to address contaminated soil at 75 properties and 10 alleyways located in the offsite properties surrounding the facility area (FA). The work was performed under Work Assignment No. 224-RDRD-B5A1 of Contract No. EP-S5-06-01. The work was completed in accordance with the *Old American Zinc Plant Superfund Site, Fairmont City, St. Clair County, Illinois, Remedial Design Work Plan* (CH2M 2017), the *Record of Decision, Old American Zinc Plant Superfund Site* (EPA 2014), and the *Remedial Design/Remedial Action Handbook* (EPA 1995).

1.1 Site Description

The OAZ Superfund Site is located in the Village of Fairmont City in St. Clair County, Illinois. The site includes a 132-acre FA and surrounding properties where elevated metal concentrations associated with the facility operation were found in different media. The FA is bordered by several commercial and industrial properties, including Garcia Trucking to the west, CSX Intermodal railroad yard to the south, and General Chemicals to the east. The site also includes properties near the FA (surrounding properties), primarily in Fairmont City, as shown in Figure 1-1.

1.2 Site History

OAZ conducted zinc-smelting operations at the site from 1916 to 1967. Slag from the smelting operation was cooled by placing the molten material along the northern and western boundary of the FA. The slag stock piles originally encompassed an area of 15 acres. The site, including the clinker and other smelting residues on the property, was purchased by XTRA Intermodal, Inc. (XTRA), in 1979. XTRA operated a trucking terminal at the site until 2003 that included lease, storage, and maintenance of a diverse fleet of trailers. XTRA ground and redistributed the slag stockpiles on the FA to build up and level the former plant site to facilitate its trucking operation. At present, redistributed slag on the FA cover an area of 125 acres with thickness ranging from 6 inches to 9 feet (ENTACT 2012).

Site investigations conducted at the site since 1994 detail the nature and extent of contamination in the FA and surrounding properties. ENTACT completed a remedial investigation (RI) and feasibility study (FS) for the site in 2012 and identified contaminants in different media that included slag stock piles, ground slag that was used as fill material, and high metal concentrations in shallow groundwater in the FA. The impacted surrounding areas include residential, commercial, and vacant properties and village alleyways and drainageways that were contaminated with runoff from the facility. Ground slag was also transported to offsite properties by local businesses, residents, and the Village for surfacing village alleyways and used as fill material in residential properties (ENTACT 2012). Most of the impacted properties are located to the west of the site, with small pockets of trailer park and residential developments to the north, south, and east.

EPA, under the provisions of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), conducted a Time-Critical Removal Action (TCRA) from 2002 to 2003. A total of 462 offsite properties was sampled during the TCRA, of which 209 properties were found to have lead concentrations above the Remedial Action Level of 400 milligrams per kilograms (mg/kg). Impacted soil was removed from 152 properties, with the remaining properties to be addressed under future remedial action (RA). Following the completion of the RI/FS in 2012, a ROD was issued by EPA detailing the selected remedial approach for the site. EPA entered into an Administrative Order on Consent (AOC)

with the potentially responsible party (PRP) in August 2014 to perform the RD work. The PRP was tasked with performing the RD work, and a draft final RD report (consisting of the report, selected drawings, but no technical specifications) was submitted to EPA in April 2016. In April 2016, the PRP filed for Chapter 11 bankruptcy and ceased performing additional work at the site. As a result, EPA took control of the site to complete the RD.

CH2M previously performed oversight at the Old American Zinc Site on behalf of the EPA and was tasked with completing the RD activities under WA No. 172-ROBE-B5A1 (since April 2013).

1.3 Selected Remedy and Remedial Action Objectives

EPA's selected remedy for the site is Alternative 4A, as described in the ROD (EPA 2012). The overall strategy for the site is to contain and cover the low-level-threat waste to reduce future human health and ecological risk to acceptable levels.

The selected remedy for the off-FA properties involves removal of source material (slag used as fill) and contaminated soil from the identified residential, commercial/industrial, vacant properties, or village alleyways above the applicable residential or commercial/industrial human health cleanup levels. The properties will be backfilled with imported fill that meets project specifications and restored to pre-excavation conditions. During the RA, excavated soil from the surrounding properties and alleyways will be stockpiled at the FA. The removed material will eventually be consolidated within a 35-acre consolidation area located in the southwest portion of the FA, as part of the future remedy at the FA.

Soil removal and stockpiling will be performed as follows:

- Soils from residential, commercial/industrial, or vacant properties and village alleyways will be removed up to a maximum depth of 24 inches. If concentrations exceeding the cleanup levels remain at 24 inches depth, a demarcation barrier will be placed at the base of the excavation before backfilling and restoration.
- The excavated material will be transported and stockpiled at the FA, for future placement within a constructed consolidation area that will be capped with a cover system consisting of a 24-inch low-permeability clay barrier, overlain by a 12-inch vegetative soil cover. In the interim, the excavated staging pile will be vegetated for stabilization until remediation of the FA occurs.

Residential cleanup levels for arsenic, cadmium, lead, and zinc were developed assuming unrestricted future use. Cleanup levels developed during the RI/FS (ENTACT 2008, ENTACT 2009a, ENTACT 2009b) were evaluated, and the lower of the calculated noncancer preliminary cleanup goal (PCG) and the calculated cancer PCG for each of the three target risk levels (10^{-4} , 10^{-5} and 10^{-6}) was selected as summarized in the ROD (EPA 2012).

An exception was made for arsenic, where the noncancer PCG of 32 mg/kg was selected, which is based on a hazard index of 1. The selected PCG is lower than the cancer PCG based on the 10^{-4} target cancer risk level (35 mg/kg). The cancer PCGs based on 10^{-5} (3.5 mg/kg) and 10^{-6} (0.35 mg/kg) were lower than Illinois background (13 mg/kg), and EPA does not generally require cleanup below background levels. Table 1-1 shows the final cleanup levels for residential and nonresidential properties.

Table 1-1. Final Cleanup Levels

Old American Zinc Superfund Site Surrounding Properties

Contaminant of Concern	Residential (mg/kg)	Non-Residential (mg/kg)
Arsenic	32	239
Cadmium	37	809
Lead	400	826
Zinc	6,400	306,600

1.4 Remedial Design Activities

RD activities to support implementation of the selected remedy have been outlined in EPA's Statement of Work dated February 17, 2017, attached to the Initial Work Assignment Form, dated February 17, 2017. The following activities were included in the surrounding properties' design:

- Project Management
- Community Involvement
- Field Investigation/Data Acquisition
- Sample Analysis
- Analytical Support and Data Validation
- Data Evaluation
- Prefinal/Final Design
- Technical and Post-RD Support

Project management, community involvement, and post-RD support are efforts that are required to manage the work and support EPA in related activities.

Properties and alleyways included in this design are based on results from 2002 and 2003 sampling performed by ENTACT (ENTACT 2003), predesign investigations completed by ARCADIS (ARCADIS 2016) and from 2017 predesign sampling conducted by CH2M (CH2M 2018a). Based on the analytical results from these sampling efforts, 75 properties and 10 alleyways require remediation.

Appendix A contains the design drawings, which are based on field measurements. Surveys were not performed. Drawings for properties sampled in 2017 that exceeded cleanup criteria were drafted from field measurements collected during property-sketching events. Properties that were sampled previously by ENTACT were verified during field reconnaissance if CH2M was granted access prior to or during the sketching event, and drawings were developed based on ENTACT's property sketches, CH2M's updates to ENTACT's property sketches, and publicly available aerial imagery. The property drawings include the following features: structures (such as a house, garage, or shed), property corners and boundaries, landscape features (trees and shrubs), driveways, sidewalks, patios/decks, gravel/concrete/asphalt surfaces, and streets.

Appendix B contains detailed design specifications. Appendix C contains the construction quality assurance plan (CQAP). Appendix D contains the engineer's estimate of construction cost for remediation. Appendix E includes agency consultation documentation, and Appendix F summarizes CH2M and ENTACT sampling data.

CH2M will provide general technical support for the site during the RA/construction phase, as stated in the *Remedial Design Work Plan* (CH2M 2017).

Project Delivery Strategy

Section 2 presents the project delivery strategy for the remediation at the surrounding properties. The RA will consist of excavating soil from yard areas at 75 properties and 10 alleyways where arsenic, cadmium, lead, and/or zinc concentration(s) exceed their respective cleanup levels. Each excavation will be backfilled to the original grade, and the area will be restored to as close to its original condition as practicable. The following subsections summarize primary components of the design and remediation.

2.1 Remedial Design

To streamline its development, preparation, and delivery, the RD will be accomplished in two phases: (1) preparation and submittal of the prefinal design and (2) preparation and submittal of the final design.

2.1.1 Prefinal Design

The primary objective of the prefinal design is to define, in detail, the technical parameters upon which the design will be based. It will also develop the conceptual strategies and ideas that compose the framework of the remediation project, to review the strategies and ideas with the stakeholders, and to finalize the strategies and ideas so that the final design may proceed with minimal changes (e.g., minimal cost and schedule impacts).

2.1.2 Final Design

Once the conceptual strategies and ideas and supporting technical details have been developed, reviewed, and finalized, the final design activities will begin. The conceptual strategies and ideas developed during the prefinal design will be expanded into a set of final design documents consisting of the following:

- Final BODR
- Specifications
- Drawings
- Cost Estimate
- Constructability Review
- Revised Project Delivery Strategy
- Construction Quality Assurance Plan

Detailed design drawings (Appendix A) and specifications (Appendix B) have been prepared as part of the RD. As part of the RA activities, the RA contractor will be required to present a detailed work plan to the owner's representative describing how the work will be executed.

2.2 Remedial Action

Roles during the RA will be defined as follows:

- Owner: EPA, Region 5.
- Engineer: CH2M.
- Property Owner: Property owner of individual property within the Surrounding Property Residential Area.
- Tenant: Person(s) residing at the property, if different from Property Owner.

- Owner's Representative: construction management firm, or United States Army Corps of Engineers, which the EPA has contracted to complete the RA.
- RA Contractor (contractor): Responsible for completing work described in the contract documents, and management of all subcontractors.
- Subcontractor: A subcontractor retained by the contractor.

The procurement strategy for implementing the RA includes planning, contractor prequalification, submittal of a Request for Proposals, evaluation of the proposals, submittal of the Request for Consent, contract award, and contract management.

Some of the design specifications for the project may be performance-based. This type of contract allows the contractor the flexibility to provide innovative and cost-effective solutions to the project. To provide prospective contractors with sufficient time to review the existing data and develop their proposals, the solicitation process will begin following approval of the final design document.

2.3 Procurement Activities

The owner's representative will solicit separate contracts for select components of the RA.

The components include, but are not limited to, earthwork (including transportation, staging excavated soil at the FA, surveying, landscaping, watering of residential properties, and seeding and watering of the excavated soil stockpile at the FA) under a single contract, to be performed by the primary contractor (hereinafter referred to as contractor); and an analytical laboratory services contract. Although the contractor may choose to subcontract portions of the project, in this document "contractor" will refer to the primary RA contractor.

Procurement of contractors will be completed prior to commencing construction activities. Contractors for the RA activities are expected to be competitively procured, and procurement activities for the surrounding properties will be independent of any procurement activities for the FA.

Contracts will be competitively bid among qualified businesses that are able to meet the technical, safety, and schedule requirements. Under the RA, potential bidders will be prequalified from various sources, including a diverse supplier database and the EPA Region 5 Small and Disadvantaged Business Utilization Coordinator.

The solicitation documents will include instructions to bidders, project specifications, drawings, proposed contract agreement (including EPA Prime Contract flow-down provisions), and other forms for bidders to complete. Proposals will be evaluated, and award(s) will be made to the successful bidder(s).

Basis of Design

Section 3 presents the technical details and assumptions of the RD. Implementation of the RA will consist of several components, including general activities for the project, and property-specific activities. Although some of the components will occur concurrently, the general sequencing of the primary components is assumed to be as follows:

- Procurement
- Preconstruction activities
- Mobilization
- Site preparation
- Excavation of soil above applicable cleanup levels from off-FA properties
- Transportation of excavated soils to the excavated soil staging pile at the FA (soil staging pile), and inspection and maintenance of the soil staging pile
- Containing decontamination liquids and water that accumulates in unlined excavations for waste characterization and offsite disposal
- Surveying
- Backfill and compaction
- Site restoration and maintenance
- Demobilization
- Post-construction documentation

The bidders will propose the means and methods to complete work in compliance with project specifications. The solicitation documents will identify EPA as the owner of the project and CH2M as the engineer. The owner's representative (to be determined) will oversee the execution of the RA, which will be performed by the contractor (to be determined).

3.1 Design Criteria and Assumptions

In addition to the remedial action objectives described in Section 1.4, the following design criteria and assumptions were used to complete the RD. The assumptions are discussed in greater detail in the following sections.

- The excavation depths were determined based upon sampling results from the RI and predesign sampling activities. Excavation will be performed to the maximum sample depth with one or more contaminant of concern (COC) exceedance(s) for each yard area.
- The owner's representative and contractor will set up field offices and staging areas at the FA.
- Property owners will be responsible for removing movable items, such as old cars, trampolines, and other large debris from the planned work areas, prior to mobilization to the respective residential properties.
- General debris will be staged in its own stockpile at the FA for offsite disposal.
- Yard waste from the RA will be chipped and staged in its own stockpile at the FA.

- Excavation beneath immovable items (decks, sidewalks, small sheds, above-ground pools, and gravel, asphalt, or concrete driveways, etc.) will not be performed.
- Gravel driveways and gravel easements will not be excavated. Gravel alleyways will be excavated as shown in the drawings.
- Excavation will occur to a maximum depth of 24 inches.
- Trees less than 4 inches in diameter at breast height (4.5 feet above ground surface) will be removed and replaced.
- Trees greater than 4 inches in diameter at breast height will not be removed, unless shown in the drawings. Manual excavation will be performed underneath the drip zone of trees to remain, to a maximum of 8 feet from the tree trunk to minimize root damage. The average excavation depth underneath the drip zones was assumed to be 4 inches for cost-estimating purposes, but excavation will be performed to the full excavation depth (identified on drawings), if possible.
- Excavated soil from the surrounding properties and alleyways will be staged at the FA for future incorporation into a consolidation area during the FA RA. The soil staging pile will be separate from the yard waste stockpile. Since the timing of the FA RA is unknown, the excavated soil staging pile will be vegetated to stabilize the soils in the interim. Costs associated with placing the excavated soils from the staging pile in the consolidation area are not included in this design.
 - The soil staging pile at the FA will be vegetated every 60 days, and watered for a 4-week maintenance period after each seeding. It is assumed that a satisfactory stand will be established after each 4-week maintenance period.
- Accumulated water in unlined excavations and decontamination liquids will be contained and stored at the FA for offsite disposal. It is assumed that the liquids will be nonhazardous.
- Water that accumulates in lined excavations will be pumped through a geotextile material and discharged to the storm sewer system.
- Alleyways will be restored based on the original condition (i.e., gravel or asphalt). Gravel thickness will be 8 inches, unless the depth of excavation is 6 inches, which will result in 6 inches of gravel replacement. Asphalt thickness will be 3 inches.
- Surrounding properties with sod, trees, shrubs, and perennial plants removed during excavation will be restored with similar quantity and species removed, and watered for a 4-week maintenance period. Trees that were removed for excavation will be replaced with 2-inch caliper trees of the same species. Annuals will not be replaced during site restoration activities.
 - If, after the 4-week maintenance period, the sod and/or plants are in poor condition, they will be replaced and maintained by the contractor at no additional cost to the owner, engineer, or owner's representative.
 - An additional 4-week maintenance period will be performed only on sod and/or plants that were replaced.
 - After Owner Representative's acceptance at the end of the maintenance period(s), the property owner will be solely responsible for watering and maintenance.

3.2 Preconstruction Activities

Preconstruction work includes preparation of site plans and other submittals, identification of borrow sources for backfill that meet project specifications, and coordination with St. Clair County and affected

utility companies. The work will be conducted prior to contractor mobilization. Appendix D presents the engineer's estimate of cost for this work.

3.2.1 Design Assumptions

3.2.1.1 Number of Properties Requiring Remediation

Seventy-five properties and 10 alleyways are included in this design and are targeted for remediation (Figure 3-1). Yard areas requiring remediation were determined using sampling results summarized in the TCRA investigation (ENTACT 2003), predesign investigation (ARCADIS 2016), and the predesign sampling results from CH2M's July and August 2017 sampling events, as summarized in the Data Evaluation Report (CH2M 2018a). Composite samples were collected for each yard area (one sample per yard area), in 6-inch intervals, up to a depth of 24 inches. Yard areas exceeding cleanup levels for one or more COCs will be excavated entirely to the maximum exceedance depth. Additional properties and/or alleyways may be included as a design addendum or in future design document(s) if changes in property access or use occur. The number of yard areas requiring remediation at each property and alleyway varies. Yard areas for which arsenic, cadmium, lead, and zinc concentrations are below cleanup levels based on predesign sampling will not be remediated. Properties and yard areas to be remediated are provided in Table 3-1 and in the design drawings provided in Appendix A.

Property Access

The access agreements obtained for properties where predesign sampling was completed will also provide access for RA (if owner provides consent). EPA mailed access agreements to the current property owners as part of the predesign sampling effort.

3.2.1.2 Site-Specific Plans and Preconstruction Submittals

Pre-mobilization activities will include verification of compliance with the substantive requirements of applicable regulations. The contractor will also deliver applicable preconstruction submittals to the owner's representative and/or engineer for approval before mobilization, as outlined in the specifications (Appendix B). Preconstruction submittals include site-specific plans, as outlined below and in the specifications, and identification of source materials as required in the specifications and identified in the CQAP (Appendix C).

As part of the RA activities, the contractor will be required to submit the following site-specific plans for approval:

- Site-specific health and safety plan, which will outline procedures to be followed so that the work is completed safely with no adverse health effects to workers or the community.
- Project schedule.
- Work plan.
- Transportation and disposal plan, including onsite waste management, which will guide the transportation of soil and liquid wastes to the FA and onsite management of those wastes, offsite transportation and disposal of yard debris and liquid wastes, and haul routes.
- Contractor quality control plan, which will provide detailed guidance for implementation of quality processes and procedures during construction operations, and will include an air monitoring plan that describes air monitoring activities and compliance targets.
- Stormwater pollution prevention plan (SWPPP), which will describe the potential sources of stormwater pollution at the site, describe practices to reduce pollutants in stormwater discharges from the site, and identify procedures the contractor will implement to comply with the substantive requirements of Illinois General National Pollutant Discharge Elimination System (NPDES) Permit for

Stormwater Discharge from Construction Site Activities (Illinois General NPDES permit; Illinois Environmental Protection Agency [IEPA] 2014).¹ Substantive requirements of Illinois General NPDES Permit will be adhered to, including inspections by a qualified person (that is, professional engineer, certified professional in erosion and sediment control, certified erosion sediment and stormwater inspector, or other knowledgeable person) who possess the skills to assess conditions at construction sites that could impact stormwater quality and assess effectiveness of any sediment and erosion control measures implemented. The qualifications of the qualified person will be in accordance with the requirements of Illinois General NPDES Permit and 40 *Code of Federal Regulations* Parts 121 and 122.

3.2.1.3 Staging Area, Borrow Source, and Disposal Source Identification

The contractor will identify potential borrow sources of general backfill, topsoil, select topsoil for garden areas, and gravel in their proposal and confirm the intended facility(ies) within 5 days of Notice of Award. Prior to receiving the materials, the contractor will collect compliance samples of general backfill, topsoil, and select topsoil materials with the owner's representative. The owner's representative will submit the samples to the analytical and geotechnical laboratory contractors for testing to verify that the material meets specifications and are appropriate for use. Continued compliance samples will be collected and submitted for laboratory analysis at a frequency of 1 per 1,000 cubic yards throughout the RA to verify continue compliance of the material with project specifications. Gravel will not be submitted for analytical or gradation analysis. The contractor will submit a materials sheet from the borrow source indicating that the material meets the specifications. No additional compliance submittals are required for gravel, unless the borrow source changes.

With EPA's approval, the staging area for field trailer(s), equipment, and borrow source material stockpiles will be an approximately 3-acre area located on the northeast portion of the FA, as shown in Drawing G-2 (Appendix A). The FA is secured with fencing, is in close proximity to the properties and alleyways requiring remediation, and has adequate area to stage excavated soil from the surrounding properties and alleyways, stockpile borrow materials, store equipment, house temporary field offices/trailers, and equipment decontamination facilities. Use of the staging area for stockpiling borrow materials provides the opportunity to use larger trucks to import borrow materials and for transportation and disposal, thereby reducing the overall transportation impacts. Silt fencing and appropriate erosion control measures will be placed around stockpiled materials and maintained by the contractor.

Depending on the sequencing of the FA RA and off-FA RA, excavated soils from the surrounding properties will be either staged near the existing slag stockpile area located in the northwest portion of the FA, or placed directly in the consolidation area. If the FA RA and off-FA RA are performed concurrently, the contractor will coordinate with the FA subcontractor before placing excavated material from the surrounding properties within the consolidation area. The consolidation area will consist of excavated soils from the surrounding properties and onsite residue material (building slabs and slag and smelter materials). The FA contractor will construct a perimeter berm around the consolidation area to provide containment and aid with the management of contact water and runoff generated during the filling of the cell. The FA contractor will place a 24-inch suitable soil cover over the filled consolidation area, followed by a 12-inch vegetative soil layer. Inspections and maintenance of the consolidation area will be performed by others. The consolidation area is currently designed to accommodate over 900,000 cubic yards of material. However, the final cell design may be adjusted to accommodate changes in consolidated material quantities. The consolidation area design, including sloping, compaction, and restoration requirements, is

¹ Since this RA is being performed under CERCLA, no soil erosion and sedimentation control (SESC) permit is required to be issued. The contractor will prepare a SWPPP that will meet the SESC permit requirements and discuss it with the appropriate staff at St. Clair County Soil and Water Conservation District, Canteen Township, City of East St. Louis, Village of Fairmont City, and Village of Washington Park.

outlined in the *Prefinal Basis of Design Report, Old American Zinc Plant Superfund Site Facility Area Remedial Design* (CH2M 2018b).

For the purposes of this design, it is assumed that excavated material from the surrounding properties will be staged at the FA, and will be moved to the consolidation area at a later date by the FA RA contractor. The staging pile will be constructed and maintained as described in Section 3.6.

3.2.1.4 Coordination with St. Clair County, Canteen Township, Village of Fairmont City, Village of Washington Park, and/or Nearby Cities

The surrounding properties are in St. Clair County, primarily in the Village of Fairmont City. Some of the surrounding properties are in the Village of Washington Park, and some in the City of East St. Louis. Therefore, the owner's representative and the contractor will coordinate with St. Clair County, Canteen Township, Village of Fairmont City, Village of Washington Park, and the City of East St. Louis, as appropriate. A coordination meeting before construction begins will include the following: a discussion of transportation routes; excavation near county-, township-, and village-owned utilities; live-loading plans; CERCLA-exempt permit substantive requirements; required licenses; allowable work hours; use of county, township, and/or village water; street closings; county, township, and/or village debris pickup; soil erosion control; tree removal; emergency response; and other special requirements and considerations.

3.3 Initial Mobilization

Initial mobilization includes that of the owner's representative, the contractor, and any subcontractors. Design assumptions are discussed in the following subsections, and costs are summarized in the cost estimate in Appendix D.

3.3.1 Design Assumptions

3.3.1.1 Owner's Representative and Contractor Mobilization

Initial mobilization will consist of the following, as needed:

- Documenting the condition of the haul route from the surrounding properties to the FA with pictures and videos
- Constructing temporary facilities such as field office/trailers, material storage facilities, sanitary facilities, temporary utilities, and equipment decontamination facilities
- Placing gravel at storage, laydown, and staging areas, as needed
- Delivering equipment
- Placing erosion and sediment control features, for staging pile areas, consistent with the SWPPP

Equipment to be used by the owner's representative, contractor, and subcontractors is expected to be transported by road. The contractor will provide and maintain required temporary facilities for the duration of the project, along with a field office/trailer.

Temporary utilities will be active for an estimated 34 weeks.

3.3.1.2 Site Security and Coordination

The FA, which is fenced, will be used as a staging area for the storage of equipment, stockpiling borrow material, stockpiling excavated source material, decontamination facilities, and temporary field offices/trailers. Equipment and materials will be transported to the staging area at the FA each day so that security is not required at the residential properties. Excavated soil will also be transported to the soil staging pile each day. The contractor will be responsible for coordinating the staging area location for the surrounding property work with the contractor(s) performing work at the FA, as required.

The contractor can elect to subcontract security to monitor site equipment and the staging area during nonworking hours. The contractor will maintain control over work areas during working hours at the site. The engineer, owner's representative, and EPA will not be held responsible for theft or damage to subcontractor equipment, materials, facilities, or field offices.

Since the FA is fenced, it is assumed that additional site security will not be performed. Therefore, there are no associated costs for this assumption.

3.4 Site Preparation

Site preparation activities specific to the surrounding properties RA include locating underground utilities, installing erosion and sediment control measures at stormwater inlets and other areas, documenting current conditions, and clearing and grubbing. Estimated costs associated with this work are summarized in Appendix D.

3.4.1 Design Assumptions

3.4.1.1 Excavation Limits

The excavation limits are shown in the property drawings (Appendix A), which were developed using field sketches and sampling information, aerial photography, and available parcel information.

The excavation limits include grassed areas, gardens, landscape beds, and other areas of exposed ground. Raised-bed gardens will be evaluated during the RA to determine if excavation is warranted based on bed construction and soil depth. Walkways made of pavers, bricks, or similar construction methods may be removed and reinstalled after the work is completed, but will be determined on a property-specific basis depending on the integrity, size, accessibility, level of effort, use, and other factors. Existing concrete sidewalks, gravel driveways, and gravel easements will not be removed unless in disrepair and the removal allows work to be performed more efficiently, on a case-by-case basis and as approved by EPA.

Data from the 2017 residential soil sampling event (CH2M 2018a), Predesign Investigation (ARCADIS 2016) and TCRA removal action report (ENTACT 2003) were screened against final cleanup levels to determine excavation extents.

3.4.1.2 Preconstruction Property Visits

The owner's representative and contractor, and a qualified representative to identify plant species for replacement, will perform two preconstruction property visits with the property owner. The initial preconstruction meeting will document existing conditions of the property and determine the means and methods to implement the work. The second preconstruction meeting will document property owner approval of the work to be performed at the property.

Initial Preconstruction Meeting

The initial preconstruction meeting will consist of completing a Preconstruction Property Assessment Checklist with the property owner to document the existing conditions and capture digital photographs and/or video recording. A copy of the Preconstruction Property Assessment Checklist, along with a copy of the property-specific improvement drawing, will be provided to each property owner before remediation begins.

The owner's representative will prepare a site visit folder prior to meeting with the property owners to plan property-specific RAs. The folder will contain a base drawing of the property (Appendix A), and a signed site access agreement.

During the initial preconstruction meeting, the owner's representative, contractor, and a qualified representative to identify plant species for replacement, will meet with the property owner for each

property. During the meeting, the property drawing will be updated to develop a property-specific plan for RA at each specific property. A tree and plant inventory will be prepared by a qualified representative, identifying the existing vegetation that is designated for removal and replacement or that will be kept. If perennials are not in bloom at the time of the initial property visit, an independent visit may be conducted to complete the plant inventory. The property owner would not be required to attend any independent visits. Documentation of any measures necessary to comply with location-specific Applicable or Relevant and Appropriate Requirement (ARARs) such as the Migratory Bird Treaty Act, will also occur during this meeting. The planned excavation areas may change during the course of the RA to address property owner concerns or special requests, or previously unknown conditions, such as utility locations. If significant changes to the property-specific design are discussed during the meeting, such as owner requests, the proposed changes will be documented and submitted to EPA for approval.

Photographs and/or video will be taken to document the preconstruction condition of each of the properties and adjacent areas designated for RA. Any vegetation or structures within the RA work areas that serve as migratory bird habitat will not be removed during the bird breeding season (prior to August 1) to reduce the potential of negative impacts to species protected under the Migratory Bird Treaty Act. Consultation with the U.S. Fish and Wildlife Service will be performed between the prefinal and final design stages; however, it is assumed that the RA will have no effect on federally protected species. The Illinois Natural Heritage Database contains no record of Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves near the site. State-listed threatened or endangered species are identified as potentially present in the county. Due to the developed and residential nature of the off-FA properties, such species are not expected to be present in the off-FA areas. Additional consultation with the U.S. Fish and Wildlife Service and Illinois Department of Natural Resources will occur prior to the final design stage to confirm whether these species are present in the off-FA properties, or if new information becomes apparent during the RA, to assure federally and state protected species are protected.

During the initial property visit, the owner's representative will also discuss with the property owner (and tenant, if applicable) the risks that are present during construction activities and the need to stay away from the construction areas.

Second Preconstruction Meeting

A second property visit will be held approximately 1 week prior to the start of work. Information gathered during the initial property visit (and/or subsequent independent property visits as necessary) will be compiled into a preconstruction package with copies of notes, updated property drawings, plant inventory, and a CD/DVD of photographs and/or video documenting the preconstruction conditions. After the second property visit, the property owner, owner's representative, contractor, and any subcontractors present at the meeting will all sign an agreement describing the work to be performed at the property.

3.4.1.3 Utility Locate

The one-call utility-location system (JULIE) will be contacted, and a third-party utility-locating service will be used to identify utilities within and near the excavation areas before work begins at each property. During the initial preconstruction property visit, the property owner (and tenant, if applicable) will be interviewed to determine if there are any undocumented or private utilities, such as irrigation systems, on the property. The location of property-owner-identified utilities will be confirmed using a third-party utility-locating service and other physical means at the property. The actual location will be recorded on the property drawing for permanent documentation. Alternative utility routing may be necessary and may consist of temporary disconnection of low overhead lines or shielding of electric lines.

3.4.1.4 Survey No. 1—Preconstruction Survey

Three surveys will be performed at each property:

- Preconstruction survey to document existing surface elevation.
- Post-excavation survey to document excavation depths.
- Post-backfilling survey to document the restored elevations.

The surveying subcontractor (subcontracted to the contractor) will establish a minimum 10-by-10-foot grid, and then use a level and rod to measure pre-excavation elevations. Surveys will be conducted by an Illinois-licensed surveyor.

3.4.1.5 Property Protection

Before any soil excavation can begin, two points of continuous access for property owners and tenants will be established and maintained when possible, with one point of continuous access at all times. If it is necessary to restrict access for extended periods, the work will be done at a time when the property owner and tenant will not be present at the property. Property owner and tenant access to the property will not be restricted between the hours of 6:00 p.m. and 7:00 a.m.

Appropriate signage and protective measures will be placed where required for pedestrian traffic on sidewalks or vehicular traffic on streets in accordance with the transportation and disposal plan developed by the contractor. Temporary construction (orange safety) fences will be maintained around active excavation areas to demarcate zones that should not be entered by members of the public.

3.4.1.6 Clearing, Grubbing, and Tree, Shrub, and Fence Removal

Clearing and grubbing will be performed, where necessary, at properties where excavation activities will occur. Stumps will be ground up during clearing and grubbing or dug out during soil excavation. Roots greater than 3 inches in diameter will be ground up during stump removal to the target excavation depth. Vegetation will be removed flush with ground surface.

Some trees may require removal due to elevated COC concentrations in the soil, presence of slag, health and safety concerns, or to address property owner concerns. To define elevated COC concentrations, a surface-weighted average concentration (SWAC) was calculated for each COC in each yard area.

The SWAC was calculated using the maximum COC concentration from 6 to 24 inches below ground surface (bgs) (i.e., material that would remain in-place during excavation), the surface area underneath tree drip zones, the maximum allowable concentrations of chemical constituents in uncontaminated soil used as fill material (defined in 35 Illinois Administrative Code 1100, Subpart F), and surface area outside of tree drip zones. If the calculated SWAC exceeded the cleanup criteria for any of the COCs, additional tree removal was assumed to achieve the target excavation depth in the yard area.

During the RA trees will be evaluated on a case-by-case basis to minimize tree removal while maximizing contaminant removal. Trees may be selected for removal if they are located in yard areas where contamination significantly exceeds the cleanup criteria. It is assumed that trees less than 4 inches in diameter at breast height will be removed. Trees larger than 4 inches in diameter will remain in-place. Actual trees for removal may be modified during preconstruction activities. Aboveground plant materials removed as part of clearing activities will be recycled at an offsite facility. The contractor may elect to take tree trunks containing no visible soil to a local mill for lumber. Disposal of belowground root mass associated with tree, shrub, and vegetation will be managed as contaminated material in accordance with the contractor's transportation and disposal plan, and will be transported to the FA, where it will be ground up and stockpiled for offsite disposal.

It is expected that the property owner will remove personal items from the work areas prior to the start of work. Debris located within the excavation areas will be removed with approval from the property owner. Examples of debris may consist of yard waste, wood, concrete pieces, or other materials. Personal items that are not removed by the property owner will be inventoried and temporarily stored at another location within the property or in a secure place at the staging area. Items removed from the property

(either for storage or disposal) will be identified in an inventory list included in the property owner preconstruction package.

The contractor will determine access to soil excavation areas. The access point may be narrow at some locations because of existing site features (such as fences or debris). The contractor may remove and temporarily store sections of fence, if necessary, to allow for access. The removed fencing sections will be stored at the property outside of the excavation limits or at the staging area. Based on observations at the residential properties that need remediation, fence section removal and storage will likely be needed for access to the areas requiring remediation. The contractor will coordinate with the property owners to identify and document the items that need to be relocated. Documentation will be provided on the preconstruction checklist.

Of the 75 properties needing remediation, the average area requiring clearing and grubbing is estimated to be 5,280 square feet per property. It is assumed that clearing and grubbing will not be necessary for the alleyways.

3.4.1.7 Erosion and Sediment Control

Erosion and sediment control measures will be implemented in the staging area, at residential properties, and right-of-way areas as necessary during active construction activities and prior to vegetative stabilization. Erosion control measures at the staging area and excavated soil staging pile will be as specified in a SWPPP and will be consistent with the requirements of 35 Illinois Administrative Code 724.654 and IEPA General NPDES Permit No. ILR10, and may include silt fencing, inlet protection, and appropriate best management practices (BMPs) at the construction site entrance and exit. BMPs will include the following: administrative controls (for example, planning- and scheduling-related BMPs); signage; good housekeeping practices; and stormwater, erosion, and sediment controls. Substantive requirements of Illinois General NPDES Permit for Storm Water Discharges from Construction Site Activities (IEPA 2014) will be adhered to, including inspection of erosion control measures. Excavated soils will be stockpiled at the FA and covered with plastic at the end of each workday, or as necessary due to inclement weather. Erosion and sediment control measures will be installed and maintained by the contractor around the excavated soil staging pile from the surrounding properties for the duration of construction activities, and until a satisfactory stand of grass is established or straw matting is placed on the staging pile and the FA.

Erosion and sediment control measures at residential properties or right-of-way areas may consist of inlet protection, silt fencing, erosion control blanket, and BMPs. Appropriate erosion and sediment control measures will be installed prior to any ground disturbance at a residential property and will be maintained during the earthwork activities at the property. The use of silt fence at the residential properties is not the preferred erosion control measure due to maintenance requirements, but will be used if necessary. The silt fence will be removed after backfilling and placement of erosion control matting or sod has been completed. Erosion and sediment control measures that require removal, such as inlet protection, will be removed after placement of sod and final street cleaning.

The contractor is responsible for inspection of temporary soil erosion and sedimentation control measures during construction, and for as long as necessary based on the SWPPP. Damaged or insufficient erosion and sedimentation control measures will be promptly replaced or repaired. Erosion and sediment control measures at the FA will be removed after all onsite work has been completed and heavy equipment has been moved offsite.

3.5 Excavation, Transportation, and Disposal

The descriptions of excavation, transportation, and disposal work and design assumptions are provided in the following subsections. Appendix D includes the estimated costs associated with this work.

3.5.1 Description of Work

Excavation, transportation, and offsite disposal activities will be performed. Completion of excavation activities will require soil excavation by both mechanical and manual methods.

Based on the Illinois Department of Natural Resources Historic Preservation Division's website, no properties planned for remediation are listed on the National Register of Historic Places (2017). Additional evaluation will be done to determine whether properties planned for remediation are adjacent to National Register properties. If so, the Illinois Historic Preservation Agency will be consulted prior to issuing the final design to evaluate and develop RD mitigation aspects for any adverse impacts. Appendix E contains documentation from the Illinois Department of Natural Resources Historic Preservation Division's website.

3.5.2 Design Assumptions

3.5.2.1 Excavation Approach

A yard area is designated for remediation if one or more of the sample intervals exceeded the cleanup levels for one or more COCs. For estimation of quantities, the excavation in each yard area was determined by the maximum sample depth with an exceedance of cleanup levels.

Yard areas requiring remediation were determined using sampling results summarized in the TCRA investigation (ENTACT 2003), predesign investigation (ARCADIS 2016), and the predesign sampling results from CH2M's July and August 2017 sampling events, as summarized in the Data Evaluation Report (CH2M 2018a). During the RI, properties were sampled to a maximum depth of 18 inches bgs. During the predesign sampling events, properties were sampled to a maximum depth of 24 inches bgs. Based on the analytical results from the RI and predesign sampling activities, over 100 properties and 15 alleyways exceeded the cleanup levels for at least one COC. Properties and alleyways with lead concentrations greater than 1,200 mg/kg (and some additional properties with lead concentrations near 1,200 mg/kg) were prioritized for removal action and are not included in this design. Seventy-five properties and 10 alleyways requiring remediation are included in this design. Appendix F summarizes data used to determine excavation limits for properties and alleyways included in this design.

Excavation of yard areas will be conducted from a minimum of 6 inches bgs to a maximum of 24 inches bgs. In instances where one or more COC(s) exceed cleanup levels in soil at the maximum sample depth (24 inches), demarcation fabric will be placed at the base of the excavation over the entire yard area to indicate the potential for exceedance(s) at depths below the excavation depth. Properties that were sampled to a maximum depth of 18 inches will be excavated to 24 inches, and demarcation fabric will be placed at the base of the excavation.

3.5.2.2 Excavation of Soil

Mechanical excavation will primarily be used. However, within 8 feet of a tree trunk (or within the drip line of a tree if the drip line radius is less than 8 feet), excavation will be limited to a maximum depth of 6 inches and will be performed exclusively using manual excavation to minimize tree-root damage, unless shown otherwise in the property drawings. Manual excavation will be performed to expose and avoid damaging woody roots 1 inch in diameter or greater. Manual excavation will follow the roots 1 inch in diameter or greater to the horizontal extent of the excavation (or the tree drip line) to expose the roots. At a distance greater than 8 feet from the trunk, mechanical excavation may be conducted using a mini-excavator (or equal) and spotter to remove soils between roots exposed by manual excavation. If roots are damaged, corrective pruning will be conducted to create a clean cut and promote quick wound closure and regeneration.

Manual excavation will also be done around buried utilities within or near excavation areas. Currently, according to the Underground Utility Facilities Damage Prevention Act Illinois Compiled Statutes (ILCS)

220 50/ (220 ILCS 50/4) and the JULIE Excavator Handbook, hand digging is required where utilities are going to be exposed or are likely to be exposed. “Soft excavation techniques,” including hand digging, within a “caution zone” will be required within 18 inches of either side of the approximate location marks. Hand excavation will also be performed in areas with limited access or existing site features that impede mechanical excavation, or where heavy equipment may damage structures.

If equipment will travel between the excavation and the truck, 0.75-inch plywood, or approved equivalent, will be placed on the ground surface where equipment will travel. The plywood will be secured to the ground to distribute the weight of the equipment, thus protecting shallow tree roots and minimizing ruts in areas outside the excavation extents. Polyethylene sheeting (a minimum of 6 mil thick, or approved equivalent) will be placed on the ground between the excavation area (or plywood sheeting, if used) and trucks to prevent spillage or tracking of contaminated soil. The sheeting will extend a minimum of 2 feet under the truck. Any spillage that may occur onto the plywood or sheeting will be cleaned up and placed into the truck.

There will be an offset around existing structures where no excavation will be performed to provide protection for the structures. Soil excavation will be performed to within 1 foot of permanent structures at a 1-to-1 slope to minimize damage. If the permanent structure is a mobile home, soil excavation will be performed to within 3 feet of the support point loads at a 1-to-1 slope to minimize damage. A 1-to-1 slope is not required where no permanent structure is present, such as at property lines and yard area divides. Soil excavation will be performed to a maximum of 6 inches from permanent surfaces (for example, sidewalks), depending on the condition of the surface. If the permanent surface is in good condition, no offset for soil excavation is required. Where gardens are adjacent to a permanent structure, except for mobile home support point loads, manual excavation will be performed up to within 6 inches of the surface of the structure to minimize remaining impacted soil in areas of high contaminated soil exposure potential. Manual excavation of the top 2.5 to 3 inches of grasses or groundcover in the offset areas will be completed to remove contaminated surface soils and provide a uniform appearance after restoration.

Vertical excavation limits will be performed to at least the excavation depth identified on the drawings, and up to 0.1 feet deeper (i.e., within 0.00 foot and plus 0.10 foot). Horizontal excavation limits will be performed to the excavation limits identified in the drawings, and up to 0.20 feet outside the excavation limits (i.e., 0.00 foot to plus 0.20 foot). Excavated soil will be loaded into trucks or into containers that will be loaded onto trucks for transport to the FA. Temporary stockpiles of excavated soil prior to loading will not be allowed to remain overnight at residential properties or within alleyways.

Confirmation samples will not be collected. The excavation depths were determined based upon sampling results from the RI and predesign sampling activities. Demarcation fabric will be placed over the entire yard area to indicate the potential for exceedance(s) at depths below the excavation depth for properties and alleyways excavated to 24 inches.

If areas of suspected contaminated fill are visually observed during excavation, additional excavation may be performed in these areas at the direction of the engineer and/or owner’s representative. Suspected contaminated fill may consist of ash, slag, sinter, clinkers, and stained or discolored soil.

Traffic control will be used as needed during earthwork activities and will comply with the requirements of Illinois Department of Transportation, St. Clair County, Canteen Township, Fairmont City, the Village of Washington Park, and the City of St. Louis, as applicable. A visual barrier, such as high-visibility construction fencing, will be placed around each excavation area to prevent accidental entry into the work area. Signage will also be posted at the properties during earthwork activities with contact information for the contractor in case of questions or concerns.

The average soil excavation volume per property is estimated to be 161 cubic yards, based on 75 properties requiring remediation. The average soil excavation volume per alleyway is estimated to be

159 cubic yards, based on 10 alleyways requiring remediation. Table 3-1 summarizes the volume of soil requiring excavation and soil excavation limits per property or alleyway.

3.5.2.3 Accumulated Water

Excavations may be lined at the conclusion of each workday when rainfall is anticipated to prevent precipitation from contacting potentially contaminated soils inside excavations. If standing water is present in an unlined excavation, or penetrates beneath the liner, the standing water will be allowed to infiltrate before backfilling activities begin, or the water will be contained in 55-gallon Illinois Department of Transportation-approved drums, portable tank(s), or approved equivalent, for subsequent transport to the FA for staging. Aqueous waste generated at the FA from equipment decontamination will be contained and staged at the FA.

Aqueous wastes will require offsite disposal with treatment, if necessary. Waste characterization sampling will be conducted during the RA, as necessary, to support establishment of waste profiles with an approved offsite treatment facility. Waste profiles will be reviewed by the owner's representative's waste coordinator prior to submittal to the treatment facility. Offsite disposal of aqueous waste will be coordinated and arranged upon receipt of waste profile approval. For cost-estimating purposes, it is assumed that 10,000 gallons of water will be contained, staged at the FA, and disposed offsite.

If precipitation collects on top of the temporary liner and does not contact soils, the water will be pumped through a geotextile material before being discharged to the storm sewer system with approval from the local municipality (Metro East Sanitary District). For cost-estimating purposes, it is assumed that 10,000 gallons of water will be discharged to the storm sewer system.

3.5.2.4 Air Monitoring

Real-time air monitoring for particulate matter will be conducted continuously at each property and at the FA near the borrow material staging pile and excavated material staging pile while earthwork is being performed or when the staging pile is being constructed. Data will be recorded to a data logger once per minute and checked by personnel once per 30 minutes, in accordance with the CQAP and air monitoring plan (Appendix C). The air monitoring equipment will be placed at locations to verify effectiveness of engineering controls in minimizing dust generation that may potentially leave the exclusion zone. Dust monitors will be placed upwind and downwind of earthwork activities at a property to determine the impact of the construction activities on air quality.

Dust-monitoring data will be evaluated against the EPA National Ambient Air Quality Standards for PM₁₀ of 1.5 milligrams per cubic meter (mg/m³). The standards are based on a 24-hour average, but active construction activities will only be performed for approximately 10 to 11 hours per day, so no dust generation is assumed during the non-working hours. During work hours, an alarm will be set at 0.75 mg/m³ to observe activities and determine the cause for elevated particulate concentrations and to evaluate potential mitigation measures to maintain the 24-hour average concentration below the criteria.

A health and safety dust-monitoring action limit of 0.5 mg/m³ was determined based on the maximum COC concentrations detected in samples during the RI and predesign sampling. Exceedances of the dust-monitoring criteria require dust abatement measures, typically application of water, or stop work and further evaluation.

Personal air sampling pumps will be used in conjunction with dust-monitoring equipment and will have samples collected for laboratory analysis to determine potential exposure to arsenic, cadmium, lead, and zinc. These samples will be representative of the worst-case exposure that may occur to any potential receptors outside of the excavation area, such as residents or pedestrians, from a given excavation. Factors that will be considered include, but are not limited to, the following: (1) results of the first round of personal air sampling, (2) level of soil contamination anticipated in future excavations based on previous soil sampling data, (3) soil conditions (wetness) anticipated, and (4) level of work

activity anticipated. Air monitoring is discussed in further detail in the air monitoring plan, which is an attachment to the CQAP (Appendix C).

3.5.2.5 Waste Characterization of Soil

The selected remedy in the ROD provides for soils from residential, commercial/industrial, or vacant properties or village alleyways (off-FA properties) with COCs above human health cleanup levels to be consolidated on-FA. The soils are being consolidated in accordance with the EPA AOC policy (1996) and as discussed in the preamble to the National Contingency Plan (55 *Federal Register* 8758-8760, March 8, 1990). Therefore, no further evaluation of such soils is necessary.

However, in the event waste characterization sampling is requested by the EPA during the RA, soils will be sampled from the five yard areas with the highest COC concentrations (one yard area for each COC, plus an additional yard area for lead) and analyzed for Toxicity Characteristic Leaching Procedure and Synthetic Precipitation Leaching Procedure.

3.5.2.6 Transportation of Excavated Soil

The excavated soil will either be live-loaded directly into trucks, or will be placed into containers that will be loaded onto trucks for transport to the FA. Before a truck leaves an excavation area, the containers and truck exterior will undergo dry decontamination measures so that the containers and trucks will be free of loose soil. Trucks with loose soil will be tarped or otherwise covered before transport. For purposes of cost estimating, it is assumed that the excavated soils will be loaded at the property into 5-ton dump trucks, or comparable, and transported from the properties to the FA for staging. Documentation of load trips to the FA from each property will be completed, and will document the number of trips from each property to the FA, the time, and approximate load of each trip. Wet decontamination will be performed on all trucks that hauled contaminated soils, prior to final demobilization.

The cost of transportation will be paid based on the volume of in-place soil excavated and measured using preconstruction and postconstruction surveys. The average volume of soil that will be transported to the FA is about 161 cubic yards per property based on 75 properties and 159 cubic yards per alleyway based on 10 alleyways. Actual volumes will be determined during the RA.

Dust abatement will be performed during loadout and transportation operations as necessary to prevent emission of visible fugitive dust beyond the property boundaries. Activities may include a work stoppage until dust abatement measures are implemented. Cleaning of the roads and application of water are anticipated abatement measures. Given the site setting, transport is anticipated to be limited primarily to paved roads to transport contaminated soils to the FA and return to the properties being remediated. Unpaved alleyways are present within the residential area, and transport on these will be minimized to the extent practicable. Street cleaning of paved roads is assumed to use equipment that will capture debris after sweeping, using either mechanical methods with water for dust suppression or vacuum to minimize fugitive dust emissions. To minimize spillage of excavated soil onto the roads, plastic sheeting or tarps will be placed under trucks during loading activities, and trucks will undergo dry decontamination measures.

3.6 Excavated Soil Staging Pile at the FA

At the FA, excavated soils will be managed in a staging pile. The soil staging pile shall be no greater than 10 feet high and sloped no greater than 4 to 1 (horizontal to vertical) and will be covered daily with plastic sheeting. The approximate footprint of the soil staging pile, with sloping, will be approximately 2.7 acres. The soil staging pile will not be placed over existing monitoring wells located on the FA.

Excavated soil will be placed in controlled lifts and compacted to remove clods and significant voids. The soil should be compacted by running a bulldozer (or approved equivalent) over the placed soil a minimum of five passes to reduce the potential for erosion issues. The soil staging pile will then be covered with 4 inches of topsoil, seeded every 60 days to establish vegetation, and watered.

The watering frequency will be based on site and weather conditions to establish and maintain a satisfactory stand of grass on the staging pile, as outlined in the specifications (Appendix B). For cost-estimating purposes, it is assumed that up to 15 watering events may be required per seeding event for the soil staging pile. Actual watering frequency will depend on temperatures, natural precipitation, shade conditions, and other factors affecting soil moisture. Those portions of the staging pile not seeded for vegetation by October 15 will be seeded with a seed mixture for disturbed sites and steep slopes and covered with straw matting to minimize erosion. The staging pile will be inspected and maintained by EPA until placed in the consolidation area.

Appendix D presents the engineer's estimated costs associated for this work.

3.7 Post-excavation Survey

A post-excavation survey will be conducted at each property once excavation of soil to the design extent is completed to confirm the final depth and aerial extent is within tolerance. The contractor's surveyor will use the same grid (x and y coordinates) and datum as the preconstruction survey to the extent practicable to document post-excavation elevations. Appendix D presents the estimated costs for this work.

3.8 Filling and Compaction

Filling and compaction activities will be conducted after excavation and post-excavation survey activities are complete and verification of design extent is performed. Activities include placement and compaction of general backfill, followed by placement of topsoil, gravel, or other material described as follows:

- Lawn Areas**—General backfill will meet the requirements outlined in Table 8.4-1 of the Illinois Department of Transportation (IDOT) Geotechnical Manual. General fill will be placed in 6-inch loose lifts, with compaction between 80 percent and 90 percent of standard Proctor maximum density (ASTM International D698). In situ density testing will be performed using a nuclear-density gauge or approved equivalent to demonstrate proper compaction. General backfill will be placed from the base of the excavation to within approximately 6 inches of surrounding undisturbed grade. The remaining thickness required to match preconstruction grade (minus the thickness of sod to be placed) will be lightly compacted topsoil to minimize settlement while still allowing infiltration of water and penetration of roots. The average general backfill quantity per property is assumed to be 88 cubic yards. The average topsoil quantity per property is assumed to be 80 cubic yards. The volume of topsoil was calculated by taking the total property area requiring remediation (approximately 396,000 square feet; alleyways were excluded since they will be restored with gravel and/or asphalt), multiplying by a depth of 5 inches minus the total 1:1 sloping along property excavation perimeters, and removing volume of select topsoil or gravel in the top 5 inches for restoration (see the following bullets). The volume of general backfill was calculated as equaling the total volume of excavated soil minus the volume of topsoil, select topsoil, and gravel (see the following bullets).

Final restored grade will consider the thickness of the sod to be placed. For example, if the sod thickness is 0.20 foot, then the final restored grade will be within minus 0.10 and minus 0.20 foot of the original grade.

- Alleyways**—Prior to backfilling activities, a proof roll will be performed on the underlying subbase material with a fully loaded quad-axle dump truck. Soil will be removed from areas with excessive settlement or pumping, until firm material is encountered. Unsuitable base material is considered to be soil with excessive settlement or pumping (greater than 1-inch rebound), and will be removed and replaced with general backfill. General backfill will meet the requirements of IDOT Standard Specifications for Road and Bridge Construction, Sections 204 and 205, and the requirements

outlined in Table 8.4-1 of the IDOT Geotechnical Manual (2015), and will be placed in 6-inch loose lifts to 8 inches below final grade. The top 8 inches of the alleyway will be restored with CA-6 aggregate, as required in IDOT Standard Specifications for Road and Bridge Construction, Article 1004.01. Material will be placed and compacted in accordance with IDOT Standard Specifications for Road and Bridge Construction 205.4 – Placing Material, 205.6 – Compaction, and all relevant sections of Division 300 – Subgrades, Subbases and Base Courses. The general fill and CA-6 aggregate will be compacted to 95 percent of standard Proctor maximum density (ASTM International D698).

At least one alleyway will be restored with asphalt. Bituminous surfaces will meet the requirements of Class A-3 surface, in accordance with the IDOT Standard Specifications (2016).

- Gardens and Landscaped Areas**—In garden areas, general backfill will be placed to within approximately 18 inches of surrounding undisturbed grade. General backfill will meet the requirements outlined in the specifications, and will be placed in 6-inch loose lifts, with compaction between 85 and 95 percent of standard Proctor maximum density (ASTM International D698). In situ density testing will be performed using a nuclear-density gauge or approved equivalent to demonstrate proper compaction. Lightly tamped select topsoil will be placed in the garden and landscaped areas from 18 inches below grade (or the maximum excavation depth if less than 18 inches) to the original grade. A total select topsoil quantity is assumed to be 43 cubic yards, which will be placed at 6 properties. The volume of select topsoil was calculated by taking the area of the gardens (total of roughly 1,164 square feet) and multiplying by a depth of 12 inches.

Suppliers of general backfill, topsoil, and select topsoil will be identified as part of the preconstruction activities. The contractor will collect samples at the source and submit them to the owner's representative to send to the laboratory for chemical analyses of target compound list (TCL) organics (volatile organic compounds and semivolatile organic compounds), TCL pesticides, TCL polychlorinated biphenyls, herbicides, and target analyte list metals. Borrow sources will also be analyzed for physical characteristics, including standard Proctor and particle-size distribution analyses. Topsoil will also be analyzed for fertility and salinity. Amendments may be added to topsoil and/or select topsoil if necessary to support establishment of sod and specifications. Borrow sources will be required to meet Illinois Clean Fill Regulations (35 Illinois Administrative Code Part 1100) and project specifications (Specification Sections 32 23 23 Fill and Backfill and 32 91 13 Topsoil Preparation) to be approved for use. If separate borrow sources are identified for topsoil and select topsoil, each source will be sampled for approval, and continued compliance sampling will be performed in accordance with the frequencies specified in the following paragraphs.

Compliance samples for each borrow source will be collected during construction activities at a frequency of 1 sample per 1,000 cubic yards to verify continued compliance with project specifications. The owner's representative will collect compliance samples with contractor assistance. Additionally, a sample will be retained by the owner's representative for visual comparison during construction activities to confirm consistency in the materials. If inconsistencies in the materials are observed, additional samples may be collected to determine continued compliance or nonconformance with project requirements.

Wet decontamination shall be performed on the decontamination pad at the staging area prior to use of equipment for backfill activities unless dedicated separate excavation and backfill equipment are used. Decontamination water will be managed as described in Section 3.5.2.3.

Appendix D presents the engineer's estimated costs associated with this work.

3.9 Post-backfilling Survey

A post-backfilling survey will be conducted to confirm that the pre-sod placement grade has been met where applicable and on a property-specific basis, that no low areas exist to allow precipitation to pond.

The same grid as the preconstruction and post-excavation surveys will be used to document post-construction elevations. Estimated costs for surveying are summarized in Appendix D.

3.10 Restoration

Restoration work includes contingencies for utility repair and final street cleaning. Sidewalk and asphalt repair, if necessary, will be performed after placement of sod or gravel in backfilled areas. Appendix D summarizes estimated costs associated with this work.

3.10.1 Contingencies

Sprinkler systems, electrical, piping, and plumbing located within or near the limits of excavation will be inspected and tested, as appropriate, to determine whether damage occurred during the remediation. Repairs will be made by appropriately qualified and licensed subcontractors as applicable.

In the event that a section of fencing is removed for access and is unable to be reinstalled due to the condition of the fence, a new section of fencing will be purchased and installed. The fencing will match the type and finish of the remainder of the fence. It is assumed that fencing sections requiring replacement will be an 8-foot length. Fence sections that are removed from properties and are not usable (estimated to be 2 8-foot panels at 15 percent of the properties) will be replaced with new fence sections. Wherever possible, the original fencing will be replaced instead of installing new sections.

Repairs will be performed according to manufacturer's instructions and applicable building codes. Unforeseen conditions encountered during excavation will be addressed on a site-specific basis.

3.10.2 Street Cleaning

Street cleaning will be performed daily from the time earthwork is initiated until topsoil placement at properties or gravel placement in alleyways is complete. Final street cleaning will be conducted prior to the removal of the erosion and sediment control measures, such as inlet protection (if applicable). Street cleaning is assumed to use equipment that will capture debris after sweeping, using either mechanical methods with water for dust suppression, or vacuum, to minimize fugitive dust emissions. Debris from street cleaning will be managed with excavated soil for transportation and placement in the soil staging pile.

3.10.3 FA Staging Area

Areas of the FA disturbed during the RA activities in the surrounding properties will be restored to preconstruction conditions to the extent practical. Disturbed areas in the FA will be seeded or covered with approximately 3 inches of gravel, as necessary, to maintain the integrity of the staging area.

3.10.4 Concrete and Asphalt Repair

Damage to concrete sidewalks and asphalt areas, including streets, resulting from the RA activities will be repaired. Repairs will be performed according to applicable code enforcements. The design includes a contingency that up to 150 cubic yards of damaged concrete sidewalk will be repaired. It is assumed that asphalt will be repaired using IDOT Standard Specifications for Class A-3 surface.

3.11 Landscaping and Maintenance

Landscaping and maintenance includes replacement of trees, shrubs, and perennials removed as a part of the excavation, placement of sod over the backfilled excavation areas, and watering. Annual plants will not be replaced. Appendix D summarizes estimated costs associated with this work.

3.11.1 Tree, Shrub, and Perennial Replacement

Trees, shrubs, and perennials will be replaced per property as follows:

- Any removed trees will be replaced during landscaping activities. Tree species that are at risk due to current or anticipated diseases or infestations in the foreseeable future (such as Emerald Ash tree borer) will not be replaced with the same species. It is estimated that 37 trees will be removed and replaced during the RA. Trees that were removed for excavation will be replaced with 2-inch caliper trees of the same species. Actual quantities will be determined during preconstruction meetings with property owners and completion of landscape inventories.
- Shrubs will be replaced with those of similar species and quantity as were removed, which is estimated for costing purposes at 82 shrubs. Actual quantities will be determined during preconstruction meetings with property owners and completion of landscape inventories. The replacement shrubs will be nursery grade and not mature size, regardless of the size of the removed shrubs.
- Perennial plants will be replaced with the similar quantity and species removed. For cost-estimating purposes, it is assumed that 100 perennials will be replaced, based on observations during the field sketching events. Actual quantities will be determined during preconstruction meetings with property owners and completion of landscape inventories.
- Because annuals achieve their growth cycle in 1 year, they will not be replaced during site restoration activities.
- Mature trees that die during the RA because of the construction activities will be replaced with a 2-inch-caliper tree of the same species as practicable.

Plants will be placed within 24 hours of sod placement to maintain a 4-week maintenance period for the property. Plants will be watered for 4 weeks after placement. Plants that are showing signs of inundation or drought, such as brown or wilted leaves, at the end of the 4-week period will be replaced and maintained by the contractor. An additional 4-week maintenance period will be performed on plants that were replaced. After Owner Representative's acceptance at the end of the maintenance period(s), the property owner will assume full responsibility for watering and maintenance.

3.11.2 Sod, Mulch, and Decorative Stone

Sod will be placed to restore the excavation area to preconstruction extents. The use of sod allows for immediate restoration to a finished surface and provides erosion control. The average area requiring sod per property is estimated at 5,280 square feet.

Mulch, 3 inches thick, will be placed over select topsoil in areas where gardens were present prior to the RA and used for plantings as required in specifications (estimated 11 cubic yards, total).

Areas with existing decorative stone (not gravel) will be replaced with 3 inches of comparable material. It is estimated that a total of 10 cubic yards of rock mulch will need to be replaced during the RA.

Sod will be watered for 4 weeks after placement. For cost-estimating purposes, it is assumed that up to 15 watering events may be required per property. Actual watering frequency will depend on temperatures, precipitation, shade conditions, and other factors affecting soil moisture. Sod that is showing signs of inundation or drought, such as discoloration or contraction of the edges of the sod, at the end of the 4-week period, will be replaced and maintained by the contractor, followed by an additional 4-week maintenance period for the sod that was replaced. After Owner Representative's acceptance at the end of the maintenance period(s), the property owner will assume full responsibility for watering and maintenance.

3.11.3 Erosion and Sediment Control

Erosion and sediment control measures will be in accordance with the SWPPP. Erosion and sediment controls that may be used and require removal, such as inlet protection, will be removed after the placement of sod and final street cleaning. Inspections will be performed during excavation and restoration for as long as necessary based on the SWPPP and compliance with Illinois General NPDES Permit for Stormwater Discharges from Construction Site Activities (IEPA 2014). Damaged or insufficient erosion and sediment control measures will be promptly replaced or modified to be rendered effective.

3.12 Post-construction Property Review

Property-specific reviews will be performed after each property is restored to document the restoration and the condition of the surrounding area. Photographs and/or video of the restored work areas will be obtained to document the post-construction condition. A letter will be prepared for the property owner documenting the completion of the RA at the property. The current property owner will be asked to sign off that their property has been restored to the condition agreed to during the preconstruction meetings or to identify any outstanding issues (punch list items) to be addressed. If no punch list items are identified, the EPA and an owner's representative will meet with the Property Owner to perform a final inspection.

Punch list items will be corrected within 7 workdays of receipt of the punch list. After the completion of the punch list items, the EPA and an owner's representative will meet with the Property Owner to perform a final inspection.

Appendix D presents the engineer's estimated costs associated with this work.

3.13 Warranty Period

The landscape subcontractor will warranty trees, shrubs, and perennials through the end of the 4-week maintenance period, and replace defective trees, shrubs, and perennials, if necessary, as identified within the warranty period. Watering after tree, shrub, or perennial warranty replacement will be provided by the contractor. After Owner Representative's acceptance at the end of the maintenance period(s), the property owner will assume full responsibility for watering and maintenance. For cost-estimating purposes, it is assumed that the warranty will be 12 percent of the total landscaping costs.

3.14 Demobilization

Demobilization will include removal of the temporary facilities such as field trailer, utilities, material storage facilities, equipment decontamination facilities, and erosion and sediment control features. Until site restoration and demobilization are completed, the owner's representative will perform construction oversight and will verify that erosion and sediment control features comply with the SWPPP.

Appendix D presents the estimated demobilization cost.

3.15 Post-construction Documentation

The owner's representative will prepare an RA completion report, including an ambient air monitoring report. The RA completion report will document the work completed by the owner's representative and its contractors using a report format used for other similar residential Superfund sites and in accordance with *Close Out Procedures for National Priorities List Sites, OSWER Directive 9320.2-22* (EPA 2011).

Table 3-1. Excavation Depths and Volume of Excavated Material
Old American Zinc Superfund Site Surrounding Properties

Property Address	Parcel ID(s)	Section A (FY1)	Section B/ Back (BY1)	Section C (FY2)	Section D (BY2)	Section E	Front	Middle	Side	Volume of Excavated Material (cubic yards)
	02-08.0-203-019, 02-08.0-203-020, 02-08.0-203-030,			6	6					67
	02-08.0-204-075,								18	55
	02-08.0-204-069,02-08.0-204-070,02-08.0-204-071, 02-08.0-204-068,				12					131
	02-08.0-204-057,02-08.0-204-058, 02-08.0-204-059	6	6							41
	02-08.0-205-072,		6				18		18	110
	02-08.0-205-046,							12		43
	02-08.0-206-071, 02-08.0-206-070,02-08.0-206-068, 02-08.0-206-069		6							56
	02-08.0-206-083,		6							75
	02-08.0-207-043		24							151
	02-08.0-206-052,		6				12			40
	02-04.0-301-005,		24							104
	02-04.0-301-017,		18							32
	02-04.0-302-042		12							101
	02-04.0-303-054				6					25
	02-09.0-106-091		18		12					181
	02-09.0-106-089		12							75
	02-04.0-305-074		24							302
	02-09.0-106-056		6							28
	02-04.0-312-016		12							58
	02-04.0-305-040		12							51
	02-04.0-313-029		12							229
	02-04.0-313-013		6							58
	02-04.0-313-014, 02-04.0-313-015		6							29
	02-04.0-307-056		12							80
	02-09.0-108-069	24	6							1913
	02-09.0-108-046,02-09.0-108-047,				18					81
	02-04.0-313-065, 02-04.0-313-066		6							152
	02-04.0-314-086	6								55
	02-04.0-308-039, 02-04.0-308-040	6	6							67
	02-04.0-307-045, 02-04.0-307-046	24	12							282
	02-04.0-308-045		12							29
	02-04.0-314-066, 02-04.0-314-067		24							153
	02-09.0-109-045	6	6							107
	02-09.0-110-012	6			12					412
	02-09.0-110-011	12	6	6	6					1149
	02-04.0-314-064, 02-04.0-314-065		24							176
	02-04.0-314-034, 02-04.0-314-035, 02-04.0-314-036, 02-04.0-314-037, 02-04.0-314-038			12						141

Table 3-1. Excavation Depths and Volume of Excavated Material
Old American Zinc Superfund Site Surrounding Properties

Property Address	Parcel ID(s)	Section A (FY1)	Section B/ Back (BY1)	Section C (FY2)	Section D (BY2)	Section E	Front	Middle	Side	Volume of Excavated Material (cubic yards)
	02-04.0-308-074, 02-04.0-308-075, 02-04.0-308-076, 02-04.0-308-077, 02-04.0-308-078, 02-04.0-308-079, 02-04.0-308-080, 02-04.0-308-081, 02-04.0-308-082	24	6							288
	02-04.0-308-069, 02-04.0-308-089		6							41
	02-04.0-308-064, 02-04.0-308-066	24								207
	02-04.0-401-043	6	6							88
	2352 N 52ND: 02-09.0-206-001, 02-09.0-206-002, 02-09.0-206-003, 02-09.0-206-004, 02-09.0-206-005; N 52ND: 02-09.0-206-006, 02-09.0-206-007, 02-09.0-206-008		6							95
	02-09.0-205-029, 02-09.0-205-030, 02-09.0-205-031		6							46
	02-10.0-107-021, 02-10.0-107-049, 02-10.0-107-017, 02-10.0-107-018, 02-10.0-107-019, 02-10.0-107-020			12						236
	02-10.0-106-037, 02-10.0-106-038						6			37
	02-10.0-108-051,	6								75
	02-03.0-104-024,	12								187
	02-03.0-201-006,		12							28
	NA			12						84
	NA	18	18							351
	NA	6								44
	NA	12								79
	NA	12								97
	NA	18	12							307
	NA	24								131
	NA		12							99
	NA			6	6					96
	02-04.0-202-019, 02-04.0-202-020, 02-04.0-202-021, 02-04.0-202-022	6		6						104
	02-04.0-203-007, 02-04.0-203-008		12				12			182
	02-04.0-303-061, 02-04.0-303-062	6	6							223
	02-04.0-305-006, 02-04.0-305-007, 02-04.0-305-008	6	12							141
	02-04.0-401-001, 02-04.0-401-002, 02-04.0-401-003, 02-04.0-401-004, 02-04.0-401-005	12	12	12	24					694
	02-04.0-202-003, 02-04.0-202-004,	12	12	18	12					333
	02-05.0-401-002,		12							83
	02-09.0-102-096	24								134

Table 3-1. Excavation Depths and Volume of Excavated Material*Old American Zinc Superfund Site Surrounding Properties*

Property Address	Parcel ID(s)	Section A (FY1)	Section B/ Back (BY1)	Section C (FY2)	Section D (BY2)	Section E	Front	Middle	Side	Volume of Excavated Material (cubic yards)
	02-09.0-106-078			6						25
	02-04.0-312-074		12							65
	02-04.0-314-072		6							40
	02-03.0-308-011	6								107
	02-03.0-304-010, 02-03.0-304-011		6							47
	02-09.0-103-022	24	12							80
	02-08.0-205-037,02-08.0-205-038	24	24	24	18					505
	02-08.0-202-074,						18		18	126
	02-08.0-202-048, 02-08.0-202-047,	18	18	18						168
	02-08.0-202-071,				24					118
	02-08.0-207-005,	24		12	18					217
	02-08.0-202-072,	24			18					128
	02-09.0-101-004,		12							68
	02-09.0-102-054			24						131
	02-04.0-400-018, 02-04.0-400-019	6	6							49
	02-03.0-307-005,02-03.0-307-006,02-03.0-307-007,02-03.0-307-008				6					48
	02-03.0-307-011						12			40
	02-03.0-304-012		6							20
	02-03.0-305-059				6					58
	NA			24						298

Compliance with Applicable or Relevant and Appropriate Requirements

This project is being performed in accordance with the CERCLA ROD for OAZ (EPA 2012). Under CERCLA, a requirement under environmental laws may be either applicable or relevant and appropriate to a removal action, but not both. *Applicable requirements* are cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, RA, location, or other circumstances found at a CERCLA site. *Relevant and appropriate requirements* are cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not applicable to a hazardous substance, pollutant, contaminant, RA, location, or other circumstances at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site and are well-suited to the particular site.

Under CERCLA 121(e), onsite RAs (that is, activities at the surrounding properties) do not need to comply with the administrative requirements of ARARs (environmental laws and regulations, such as permitting). Substantive requirements, however, must be met. Only state standards that are more stringent than federal requirements may be applicable or relevant and appropriate.

The statutes and regulations listed in Table 4-1 contain requirements deemed to be ARARs for the surrounding properties RA, and describe how the design will comply with those requirements. Table 4-1 is organized by two types of ARARs: action-specific and location-specific. Chemical-specific ARARs were described in the FS and the ROD, and were used to develop the remedial action objectives described in Section 1.3. Therefore, they are not described in this BODR. Of the ARARs described in the ROD, only those determined to relate to the selected remedy for the surrounding properties RA are included in Table 4-1.

4.1 Minimizing Public and Environmental Impacts

Environmental and public health and welfare impacts will be minimized through the following methods:

- Site access control
- Development of and adherence to SWPPP
- Transportation of excavated and backfill materials
- Placement of excavated soil within the consolidation area at the FA
- Compliance with permits/codes

4.1.1 Site Access Control

Access control to the site during construction is necessary to prevent exposure of non-RA personnel to contaminated soil and open excavations. Access will be controlled by installing fencing around work areas. Typical working hours for construction activities will be 7:00 a.m. to 6:00 p.m., Monday through Friday. Related activities may be performed at the FA outside of these hours.

Two points of continuous access for residents and property owners will be established and maintained when possible, with one point of continuous access at all times. If it is necessary to restrict access for periods of time, it will be necessary to coordinate the work to be done at a time when the property

owner and resident will not be present at the property. Access to the property will not be restricted between the hours of 6:00 p.m. and 7:00 a.m.

4.1.2 Stormwater Management

Contractors will be required to implement procedures during construction activities to prevent or reduce pollutants in stormwater discharges, consistent with NPDES Permit No. ILR10. As a matter of coordination, St. Clair County requirements will also be considered. Stormwater pollution prevention features and erosion control features will be described in the SWPPP designed to reduce stormwater pollution potential at the site. The following erosion and sediment control measures will be identified in the plan:

- Silt fence
- Inlet protection
- Temporary covering of stockpile piles and staging pile
- Appropriate BMPs at construction site entrance and exit and the excavation areas
- Inspections and maintenance procedures

Spill and release accident scenarios could occur and involve rinsates from decontamination activities or contaminated soil. Also, the potential exists for spills of vehicle fuel and hydraulic oils. The SWPPP will address the following activities:

- Preplanning for spill control
- Spill and fire control materials and equipment
- Spill control measures
- Drum, container, and tank handling and moving procedures

The plans will also provide instructions to respond to and mitigate releases on the project site.

4.1.3 Transportation and Disposal

The contractor will develop a transportation and disposal plan, which will describe transporting of excavated soil to soil staging pile at the FA, transporting and disposing of contaminated debris and aqueous waste, and importing materials from approved borrow sources. The transport vehicles will be tarped or otherwise covered to enclose all loads of contaminated and non-contaminated material during all phases of transportation, including transportation from the residences to the staging area, from the residences to the disposal facility (if applicable), from the staging area to the residences, and from the staging area to disposal facilities. The transportation and disposal plan will address the following:

- Identification of all waste streams
- Decontamination procedures
- Waste characterization and profiling
- Waste and container management, storage, labeling, and marking
- Waste transportation practices
- Manifests/haul tickets and other shipping documentation, if required
- Waste disposal, if required
- Spill response and reporting
- Dust abatement
- Traffic control, including any necessary road closure permits or protective measures
- Records and reporting

Table 4-1. Applicable or Relevant and Appropriate Location-Specific and Action-Specific Requirements for the Selected Remedy*Old American Zinc Superfund Site Surrounding Properties*

Requirement	Requirement Synopsis	Status
Location-specific ARARs		
Migratory Bird Treaty Act of 1972 (16 United States Code 703-712)	Establishes federal responsibility for the protection of the international migratory bird resources. Taking, killing, or possessing migratory birds without authorization is unlawful.	Applicable. Illinois is located within the Mississippi flyway. The design includes procedures to minimize disturbance and avoid destroying active nests. If migratory birds need to be disturbed, consultation with the U.S. Fish and Wildlife Service will occur.
National Historic Preservation Act 16 USC Section 470	The Act requires historically significant properties be protected.	Off-FA properties are not on or proposed on the National Register of Historic Properties. Additional evaluation will be performed to determine whether any listed historically significant properties are adjacent to any off-FA properties; if so, the State Historic Preservation Office will be consulted to determine whether the remedial action will cause adverse effects on listed properties.
Action-specific ARARs		
State Certifications and NPDES (40 Code of Federal Regulations Part 122.26(a)(14)(x))	Requires the development and implementation of a water pollution prevention plan or a stormwater best management plan. Also outlines monitoring and inspection requirements for a variety of activities. IEPA implements the NPDES program and the associated stormwater management requirements.	Applicable. The substantive requirements of the Illinois NPDES General permit for Stormwater Discharge from Construction Site Activities and the storm water pollution prevention plan will be followed where remedial construction activities involving land disturbance of more than 1 acre.
Fugitive Particulate Matter (Illinois Administrative Code Title 35, Part 212, Subpart K)	Establishes requirements for dust control in Sections 212.301, 212.315, and 212.316.	Applicable. The RA may generate fugitive dust; the design addresses methods to minimize and control dust to meet the regulatory standard.
Illinois Clean Fill Regulations (Illinois Administrative Code Title 35, Part 1100)	State regulations governing clean fill operations.	Applicable if imported soil fill is component of remedy to fill excavated areas.
Illinois Special Waste Regulations (Illinois Administrative Code Title 35, Part 808)	Generators are required to classify the waste, manifest the waste, use permitted transporters, and dispose of the waste at a permitted facility.	Applicable. Liquids generated by the remedial action would be considered pollution control waste.
Illinois Uniform Environmental Covenants Act (765 Illinois Compiled Statutes 122)	The purpose of an environmental covenant is to ensure that land use restrictions and engineering controls designed to control the potential environmental risk of residual contamination will be recorded in the land records and enforced over time, perpetually if necessary, while allowing that real estate to be conveyed from one person to another subject to those controls.	Applicable. The design addresses securing an environmental covenant at locations where cleanup does not achieve unrestricted use standards, to ensure that land use restrictions and engineering controls are recorded in the land records and enforced over time.

Table 4-1. Applicable or Relevant and Appropriate Location-Specific and Action-Specific Requirements for the Selected Remedy

Old American Zinc Superfund Site Surrounding Properties

Requirement	Requirement Synopsis	Status
Noise (Illinois Administrative Code Title 35, Subtitle H Part 900.102-106)	Regulations contain specific requirements that pertain to nuisance noise levels, sound emission standards, and limitations.	Applicable. The design will specify the noise levels set forth in the regulations that will not be exceeded during the RA.
Guidance for NPDES Construction Site Stormwater Discharges in the State of Illinois	Guidance related to implementation of the Federal Clean Water Act General Construction Permit program in Illinois.	Guidance for controlling stormwater discharges associated with construction will be considered in developing the SWPPP.

Construction Schedule

The RA construction is assumed to occur in 2019 over a period of approximately 34 weeks. Figure 5-1 shows the construction schedule, which was built around a mobilization date in early March 2019. The actual RA start date is to be determined.

Engineer's Estimate of Construction Cost

The engineer's estimate of construction cost for the RA, as described in this report, is estimated at \$5,397,900 (Class 2 with an accuracy of plus 15 percent to minus 10 percent) based on the results of the RI and predesign sampling, and the assumptions presented in this RD. Appendix D contains the cost estimate. The cost estimates have been prepared for guidance in project evaluation and implementation from the information available at the time that the cost estimate was prepared. The final costs of the project will depend on actual labor and material costs, competitive market conditions, actual site conditions, implementation schedule, and other variable factors. As a result, the final project costs will vary from the cost estimates presented in the final design. Because of these factors, project feasibility and funding needs must be carefully reviewed before specific financial decisions are made or project budgets are established to help ensure project evaluation and adequate funding.

SECTION 7

Drawings

The drawings have been removed from this document entirely to protect personally identifiable information. For more information, please contact the EPA Work Assignment Manager, Sheila Desai, at (312) 353-4150.

Specifications

Appendix B contains the following specifications:

DIVISION 1—GENERAL REQUIREMENTS	
01 11 00	Summary of Work
01 29 00	Payment Procedures
01 31 13	Project Coordination
01 31 19	Project Meetings
01 32 00	Construction Progress Documentation
01 33 00	Submittal Procedures
01 45 16.13	Subcontractor Quality Control
01 50 00	Temporary Facilities and Controls
01 77 00	Closeout Procedures
DIVISION 31—EARTHWORK	
31 10 00.00	Site Preparation
31 23 16	Excavation
31 23 23	Fill and Backfill
DIVISION 32—EXTERIOR IMPROVEMENTS	
32 91 13	Topsoil Preparation
32 92 00	Turf and Grasses
32 91 26	Site Restoration
32 93 00	Plants

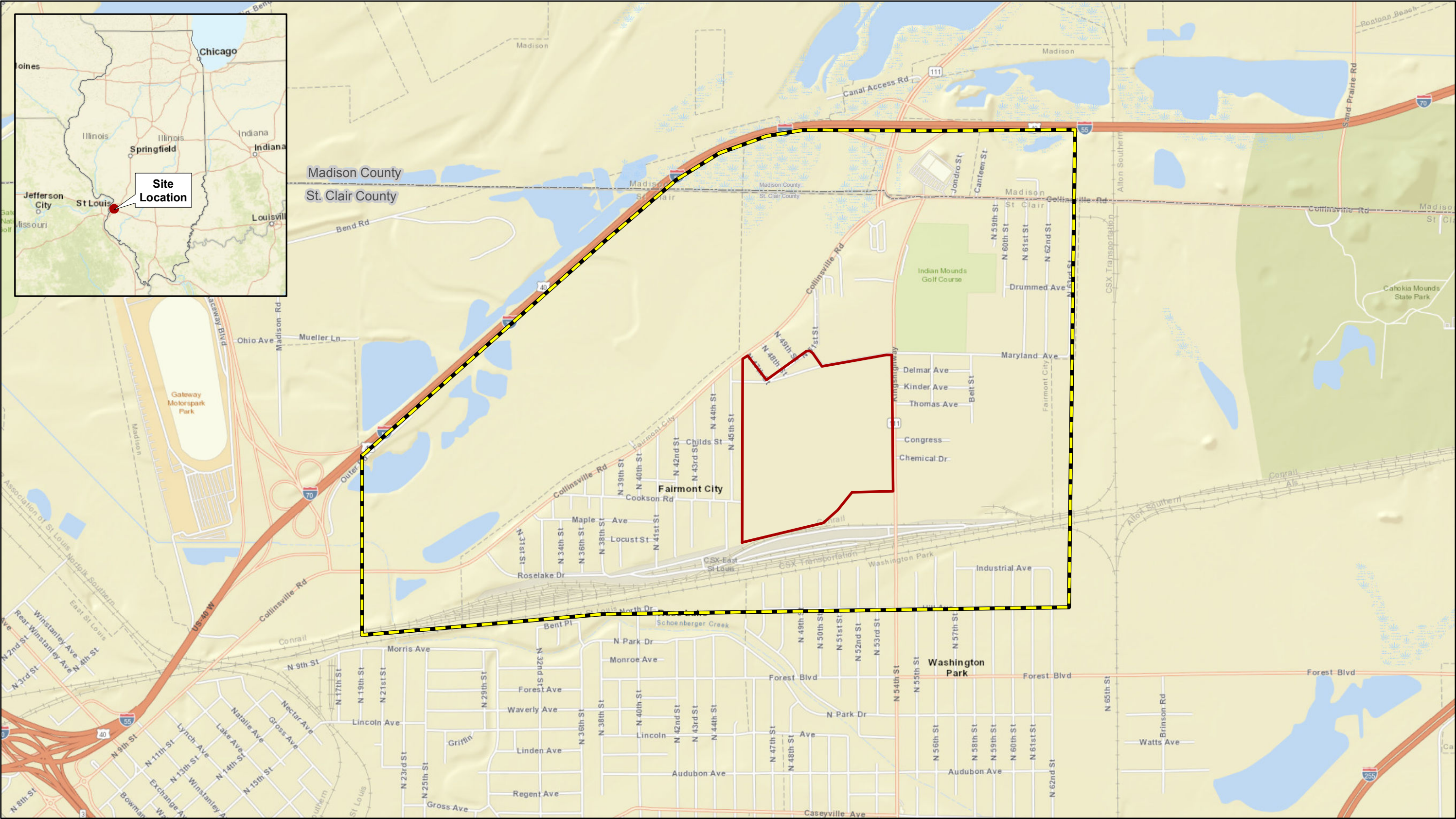
Constructability Review

Staff from CH2M's affiliate, CH2M HILL Constructors, Inc., reviewed the BODR and specifications with an emphasis on constructability. In addition, this BODR and specifications were reviewed by the project review team, and comments were incorporated, as appropriate.

References

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- CH2M HILL, Inc (CH2M). 2018a. *Data Evaluation Report, Residential and Alleyway Soil Sampling, Old American Zinc Plant Superfund Site, Fairmont City, St. Clair County, Illinois*. January
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Figures



Legend

- County Boundary
- Facility Area Boundary
- Surrounding Properties Boundary (Approximate)

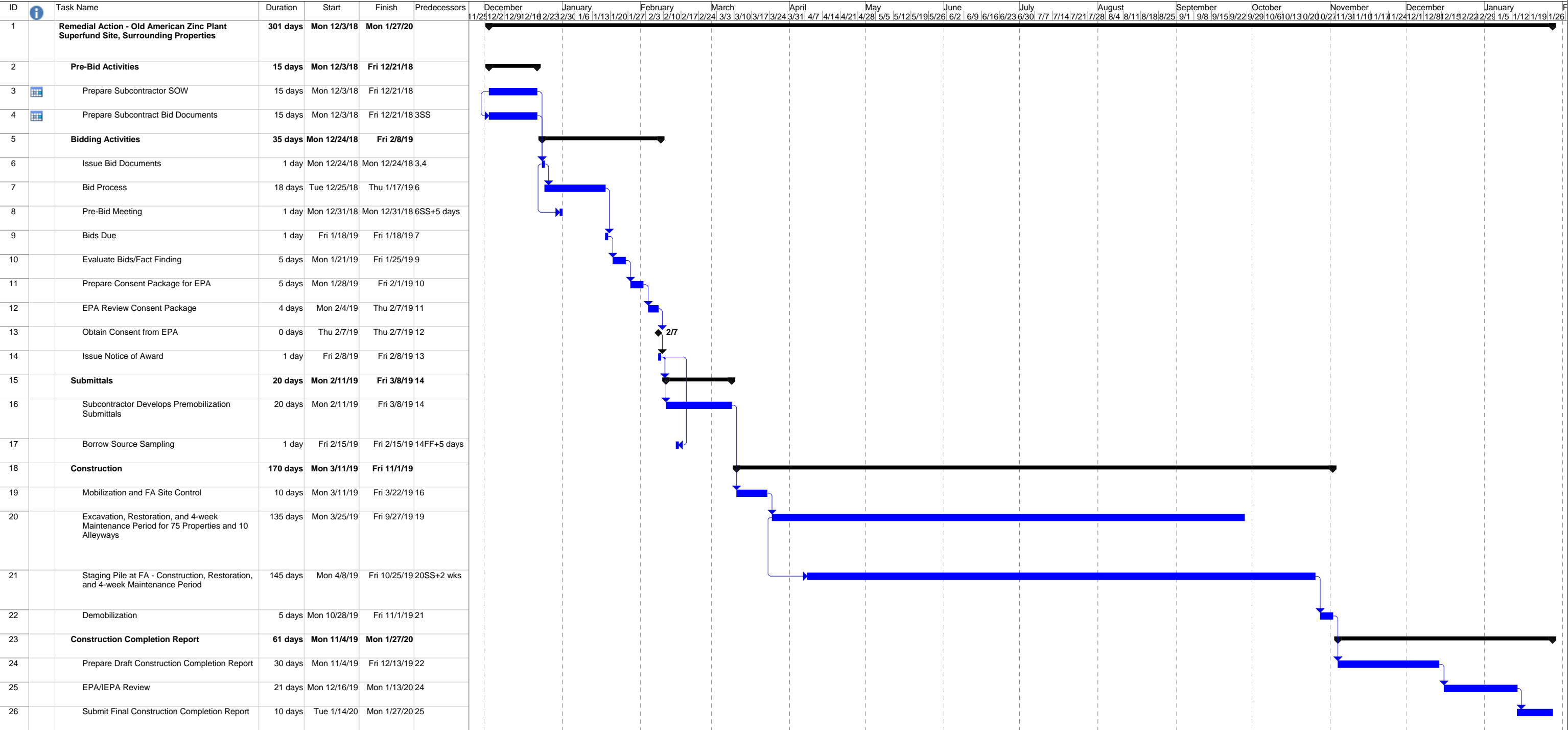
Notes:

1. Basemap provided by ArcGIS Online World Street Map.

Figure 1-1
Site Location Map
Old American Zinc Superfund Site
Fairmont City, Illinois

Figure 3-1 has been removed from this document entirely to protect personally identifiable information. For more information, please contact the EPA Work Assignment Manager, Sheila Desai, at (312) 353-4150.

Figure 5-1 Old American Zinc Remedial Action Schedule



Old American Zinc Prefinal RA Schedule
Note: Dates are estimated; actual RA start date is TBD.
Date: Tue 5/1/18

Task

Split

Milestone

Summary

Project Summary

External Tasks

External Milestone

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

External Tasks

External Milestone

Progress

Deadline

Appendix A

Prefinal Design Drawings

Appendix A has been removed from this document entirely to protect personally identifiable information. For more information, please contact the EPA Work Assignment Manager, Sheila Desai, at (312) 353-4150.

Appendix B

Prefinal Specifications

Prefinal Design for

**U.S. Environmental Protection Agency
Fairmount City
St. Clair County, Illinois**

**Old American Zinc Plant Superfund Site
Surrounding Properties Remedial Design**

Project Number: 687729

Specifications

May 2018



SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

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END OF SECTION

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

SECTION 01 11 00
SUMMARY OF WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work includes remediation and restoration of select portions (“yard areas”) of residential properties and alleyways with contaminated soils. The activities for satisfying the requirements for this project are summarized as follows:
1. Management of all Subcontractors and vendor activities onsite during the execution of this Work.
 2. Coordination with other Contractors.
 3. Mobilization of Contractor personnel, equipment, any Subcontractors, and materials to the project site as identified in Section 01 50 00, Temporary Facilities and Controls.
 4. Site preparation, including preparation of storage and staging area(s). Installing temporary facilities and controls as identified in Section 01 50 00, Temporary Facilities and Controls.
 5. Coordination with the Owner’s Representative and property owner to develop a property specific plan as identified in 01 31 19, Project Meetings.
 6. Coordinating utility locates and installing erosion controls at residential properties as identified in 31 10 00, Site Preparation and 31 23 16, Excavation.
 7. Excavation of contaminated soil from within designated yard areas and easements, as specified in Section 31 23 16, Excavation.
 8. Transportation of contaminated soil from the residential properties as identified in Section 31 23 16, Excavation. Excavated soil will be transported to the Facility Area (FA) staging area for stockpiling. The excavated soil will be contained in a stockpile no greater than 10 feet in height and sloped no greater than 4:1 (H:V). Depending on the sequencing of construction, excavated soil may be transported to the FA for direct placement into a consolidation area.
 9. Backfill of excavated area with general backfill, topsoil, select topsoil and gravel, as specified in Section 31 23 23, Fill and Backfill and Section 32 91 13, Topsoil Preparation, respectively. Stockpiles of imported borrow materials at the FA will not exceed 2,000 cubic yards each.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

10. Conducting preconstruction, post-excavation, and post-backfilling surveys at control points as specified in Section 01 31 13, Project Coordination. The surveys will be performed on the same x and y coordinate grid for each survey with supplemental points as necessary to capture grade changes.
11. Restoration of excavated surfaces and Work areas as specified in 32 91 26, Site Restoration.
12. Tree, shrub, and perennial replacement with species similar to those removed.
13. Four-week watering and maintenance period for sod, trees, shrubs, and perennials.
14. Specific Tasks Not Mentioned: Specific tasks not mentioned or completely detailed in this SOW that are necessary or normally required as part of the Work described will be performed by the Contractor as incidental Work without extra costs to the Owner or Owner's Representative, as if fully detailed. The expense for such Work will be included in the applicable lump sum and unit prices for the Work described.

B. Roles: Defined for Old American Zinc Superfund Site, Surrounding Properties Soil Remediation.

1. Owner: U.S. Environmental Protection Agency, Region 5 (USEPA).
2. Engineer: Firm contracted by the USEPA to complete the RD (CH2M).
3. Property Owner: Property owner of individual property within the Old American Zinc Superfund Site, Surrounding Property Residential Area in St. Clair County, Illinois.
4. Tenant: Person(s) residing at the property, if different from Property Owner.
5. Owner's Representative: Construction Management Firm, or United States Army Corps of Engineers, which the USEPA has contracted to complete the remedial action.
6. Remedial Action Contractor (Contractor): Responsible for completing Work described, including but not limited to, site preparation, property surveys, excavation, transportation and disposal, backfill and compaction, and property and alleyway restoration. The Contractor is also responsible for management of all Subcontractors and vendor activities and coordination with other Contractors, as required. The Contractor will be contracted to the Owner's Representative.
7. Successful Bidder: The Bidder selected for Subcontract award prior to award of Subcontract.
8. Subcontractor: A Subcontractor retained by the Contractor.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

9. Laboratory Subcontractor: Responsible for analysis of samples from the borrow sources, waste characterization, or other sources as necessary during the work. Compliance samples from borrow sources will be collected and sent to the Laboratory Contractor by the Owner's Representative. The Laboratory Contractor will be contracted to the Owner's Representative.

1.02 QUALIFICATIONS

- A. The Contractor will be licensed, insured, and bonded to operate in the state of Illinois and will comply with all applicable federal, state, county, township, village, and local laws and regulations. In the event of conflict, the most stringent of these regulations will apply.

1.03 SUBMITTALS PRIOR TO AWARD

- A. Prior to Contract award, Successful Bidder will be required to submit a certificate of insurance naming Owner and Owner's Representative as additional insured and waivers of subrogation against Owner and Owner's Representative, in accordance with the Contract. All certificates of insurance, as well as bonds, will be either executed by or countersigned by a licensed resident agent of the surety or insurance company having its place of business in the State of Illinois. Further, the said surety or insurance company will be duly licensed and qualified to do business in the State of Illinois.
- B. Prior to Contract award, the Contractor will be required to submit the following, but not limited to:
 1. Completed certification of compliant drug policy.
 2. Proof of training and medical monitoring programs.
 3. Copies of Contractor's business licenses as required by state and local statutes.
 4. Completed Waste Contractor Qualification Form.
 5. Transporter's valid U.S. DOT Number.
 6. Transporter's valid EPA ID Number (for hazardous waste transport, if needed).
 7. Transporter's Certificate of Insurance.
 8. Intended disposal facilities required for liquid waste. Provide written evidence of a valid EPA CERCLA OSR approval (40 CFR 300.440); written evidence of a valid EPA/State Permit-to-Operate (40 CFR 264.11 and 265.11); and a summary of violations (formal and informal) and how they were resolved in the last 5 years.
 9. A schedule for completing the work should be submitted as part of the bid proposal and should be updated prior to Contract award, if necessary.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

- C. Prior to Contract award, the Contractor will be required to submit the following, but not limited to:
1. Completed certification of compliant drug policy.
 2. Copies of Contractor's business licenses as required by state and local statutes.
 3. A schedule for completing the work should be submitted as part of the bid proposal and should be updated prior to Contract award, if necessary.

1.04 SUBMITTALS AFTER AWARD

- A. The Contractor will provide the following for review and approval by the Owner's Representative and/or Engineer, before the commencement of any Work onsite:
1. Contractor's site-specific health and safety plan and Activity Hazard Analysis (AHA).
 2. Safety Data Sheets (SDSs).
 3. Current hazardous waste site training and medical surveillance documentation for all field personnel, as necessary.
 4. Progress Schedule updates in accordance with Contract Agreement and 01 32 00, Construction Progress Documentation.
 5. Contractor Quality Control Plan.
 6. Work Plan. The Work Plan narrative will identify equipment, labor resources, crews and subcontracts. The narrative will also discuss project coordination, staging area plans as outlined in Section 01 50 00, Temporary Facilities and Controls and detail the means and methods to complete the work.
 7. Stormwater Pollution Prevention Plan (SWPPP), as described in Section 01 50 00, Temporary Facilities and Controls. Contractor will also provide proof of an Illinois qualified person (i.e., Professional Engineer, Certified Professional in Erosion and Sediment Control, Certified Erosion Sediment and Storm Water Inspector, or other knowledgeable person) who possess the skills to assess conditions at construction site that could impact stormwater quality and assess effectiveness of any sediment and erosion control measures implemented. The certification will be in accordance with the requirements of Illinois' General NPDES Permit and 40 Code of Federal Regulations Parts 121 and 122.

SURROUNDING PROPERTIES REMEDIAL DESIGN
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8. Table describing borrow sources and a site drawing identifying the location(s) of borrow and specific borrow areas for each material type. The table will also summarize the available quantity of each material. Submitted within 5 days from Notice of Award. The Contractor will collect the samples at the source with the Owner's Representative. The Owner's Representative will submit the samples for chemical and gradation analysis. Owner will review and approve the selected borrow source and all analytical results prior to import of backfill and/or topsoil to the site.
 9. Transportation and Disposal Plan, as described in Section 01 50 00 and, including:
 - a. Pre-disposal: The Contractor will prepare all disposal paperwork, including waste profile forms, supporting analytical results, applicable pre-printed manifests, labels, State and EPA Land Disposal Restriction (LDR) notification/certification forms (for hazardous waste), and any other document required for transportation or disposal. This information will be submitted to the Owner's Representative for review and subsequent provision to USEPA. The Generator of this waste is United States Environmental Protection Agency (USEPA) Region 5. Upon satisfactory completion of all documentation by the Contractor, the waste profile will be signed by USEPA. All waste manifests will be signed on site by the Owner's Representative on behalf of USEPA. Once the waste profile is signed, the Owner's Representative will provide the signed profile back to the Contractor for submittal to the disposal facility.
 10. Noise Control Plan, as described in Section 01 50 00, Temporary Facilities and Controls.
 11. Fugitive Dust Control Plan, as described in Section 01 50 00, Temporary Facilities and Controls.
 12. Air Monitoring Plan, as described in Section 01 50 00, Temporary Facilities and Controls.
- B. The Contractor will provide the following submittals during execution of the Work:
1. Daily reports (Contractor production report, Contractor quality control report, AHAs, and soil excavation/transportation log, waste disposal log [if necessary], weight tickets, haul tickets) during the field operations period. Daily reports will be submitted no later than 12:00 noon on the day following the work reported.
 2. Driver's vehicle registration and driver's license required for intrastate commerce in each state of operation.

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3. Summary of remedial actions completed at each property, including any deviations from the specified SOW.
4. Weekly updated schedule of values showing cumulative amounts for the billing period and cumulative project to date are to be submitted no later than 9:00 A.M. on Tuesday for each week in which work is completed for the project.
5. Weekly progress schedule update.
6. Air monitoring results, as described in Section 01 50 00, Temporary Facilities and Controls.
7. As-built redline drawings of all excavation areas with lateral and vertical limits of excavation. Beginning and ending elevation of excavation areas confirmed and documented by survey.
8. A table documenting information on wastes managed, including quantities generated at each location and disposition of wastes.
9. Disposal: The Contractor will provide a copy of the approved profile or letter of approval for each waste stream. The Owner's Representative will coordinate with the Contractor for the transport and disposal of wastes, if necessary.
10. Fully completed manifests or delivery tickets for all waste streams documenting ultimate off-site disposal, as necessary.
 - a. Manifesting: A manifest for each load of waste will be created before leaving the site. At a minimum, the manifest form will include the following information:
 - 1) Generator information, including name, address, contact, and phone number, and EPA ID number.
 - 2) Transporter information, including name and EPA ID number.
 - 3) Designated facility information, including name, address, phone number, and EPA ID number.
 - 4) Site name, including street and mailing address.
 - 5) DOT proper shipping name.
 - 6) Type and number of container.
 - 7) Quantity of waste (volumetric estimate).
 - 8) Task order or job number.
 - 9) Profile number.
 - 10) 24-hour emergency phone number.
 - b. Post-disposal: The Contractor will provide fully executed manifests (with transporter and facility signatures), weight tickets, and Certificates of Disposal/Destruction (CD) as applicable. Originals will be sent directly to the Owner's Representative via a means of traceable mail such as Federal Express or UPS or hand-delivered with a signature receipt. Original facility-signed manifests will not be attached to invoices. All original hazardous waste manifests must be returned to the Owner's Representative within 25 calendar days.

SURROUNDING PROPERTIES REMEDIAL DESIGN
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11. Additional action and informational submittals required by the technical specifications.

1.05 APPLICABLE REGULATIONS

- A. General: Work will comply with all Federal, State and local regulations, and with the latest edition of applicable sections of the following regulations, standards, and codes:
 1. American National Standards Institute (ANSI).
 2. ASTM International (ASTM).
 3. Building Code of America.
 4. National Electric Code (NEC).
 5. National Electrical Manufacturer's Association (NEMA) Code.
 6. National Fire Protection Association (NFPA) Standards.
 7. Occupational Safety and Health Act.
 8. Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations (CFR) 1910.120.
 9. Underwriter's Laboratory (UL).
 10. Illinois Statutes, including:
 - a. Air Pollution Control Rules (IAC 35 Part 212);
 - b. Water Quality Resources – Part 302 (IAC 35 Part 302);
 - c. Part 309 National Pollution Discharge Elimination System (NPDES; IAC 35, Subtitle C, Chapter 1);
 - d. Hazardous Waste Management Rules (IAC 35 Part 720).
 11. Illinois Department of Transportation (IDOT).
 12. Illinois Environmental Protection Agency (IEPA).
 13. United States Environmental Protection Agency (USEPA), including:
 - a. All regulations implementing the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986 and;
 - b. Regulations implementing the National Oil and Hazardous Substances Pollution Contingency Plan.
 14. Other applicable state and local codes and regulations.
- B. Regulatory Framework:
 1. This Work is on and adjacent to a USEPA Superfund Site, is being conducted as part of the USEPA's Superfund Program and is governed by CERCLA law. CERCLA projects are generally exempt from requirements to obtain environmental permits for on-site work; however, compliance with all substantive requirements is required. Non-environmental permits and permits related to off-site activities must be obtained.

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2. A SWPPP will be required for this Work. The Contractor will draft the SWPPP and coordinate with St. Clair County. The Contractor will provide information on best management practices for preventing stormwater discharge and will finalize the SWPPP.
3. The actions described in this SOW are not likely to result in any atmospheric discharges that would require either notification or permitting under the Clean Air Act (CAA). Under the CAA, temporary sources are not considered stationary sources and therefore are not regulated by the provision set forth in the act; however, any emission or escape into the open air can be declared a public nuisance. For compliance with Illinois Air Pollution Control Rules (IAC 35 Part 212), and to avoid the nuisance rule, the Contractor will complete sampling and monitoring per the approved Air Monitoring Plan, and will control fugitive emissions (e.g. dust) as described in Specification Section 01 50 00, Temporary Facilities and Controls.

1.06 HEALTH AND SAFETY

- A. A copy of the Owner's Representative's health and safety plan (HASP) will be supplied to the awarded Contractor for reference. The Contractor will provide its own Site-specific HASP for the performance of the Contractor's activities. The primary chemicals of concern for this project are arsenic, cadmium, lead, and zinc, which are contained within the soil that will be excavated during this project. The Contractor is responsible for the health and safety of its own personnel and any of its Subcontractors' personnel at the project site, and will provide, for all its own personnel and any of its Subcontractors' personnel, all health and safety equipment required to comply with the Contractor's Safety Procedures and that are necessary to complete the Work. Failure to comply with the appropriate health and safety procedures outlined in the Owner Representative's HASP and the Contractor's HASP, as determined by Owner's representative, will be considered grounds for a Stop Work Order. The Contractor will remedy failure of compliance, as directed and approved by the Owner's Representative, before resuming Work. The Contractor will not be paid for the time occurring after notice of Stop Work Order and before resuming Work and may be responsible for Owner Representative costs during the downtime.
- B. Responsibilities:
 1. The Contractor will designate one site employee as the "Designated Safety Coordinator" (DSC) who will interface with the Owner Representative Site Safety Coordinator (SSC) in matters of site safety.
 2. The Health and Safety Program has Three Objectives:
 - a. To protect personnel onsite;

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- b. To comply with applicable (federal, state, and local) health and safety regulations and;
 - c. Minimize health and safety liabilities.
- 3. The Contractor will identify the contacts for utility coordination in the site-specific HASP.
- 4. All employees will follow, as a minimum, the requirements of OSHA 29 CFR 1910 and 29 CFR 1926.

C. Minimum Requirements:

- 1. Personal Protective Equipment:
 - a. General Requirements:
 - 1) Responsibilities (29 CFR 1910.132):
 - a) Contractor employees must use personal protective equipment (PPE) that maintains their exposure within acceptable limits as defined in the HASP.
 - b) Employers must ensure that employees receive training in and have knowledge of the use and maintenance of PPE that is to be used onsite.
 - 2) Contractor employees must be physically able and medically determined as qualified to use the PPE and safety equipment that may be required in their job duties.
 - 3) PPE and safety equipment will be tested, inspected, and maintained in serviceable and sanitary condition.
 - a) Defective equipment will not be used.
 - b) Records of any tests or inspection will be available for inspection by the Owner's Representative.
 - 4) For hazardous waste operations (if required), the Contractor will abide by 29 CFR 1910.120, Appendix B.
 - b. Minimum Requirements for Appropriate Personal Protective Equipment: As described in the Owner's Representative's Health and Safety Plan.
 - c. Minimum Requirements for Site Safety:
 - 1) Safety color code for marking physical hazards (29 CFR 1910.144) will include the following:
 - a) Caution tape will be at a minimum of 3 inches wide, yellow, and the words "CAUTION" spelled out legibly in black.
 - b) Safety cans or other portable containers of flammable liquids will be in compliance.
 - 2) All signs and tags will be in compliance with 29 CFR 1910.145.
 - 3) Fencing will be required around excavations 29 CFR 1926.501.

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2. Outline for the Contractor's Site-specific Health and Safety Plan:
 - a. Activity Hazard Analysis:
 - 1) All definable features of Work will be addressed with an activity hazard analysis (AHA) prior to beginning each activity. This chart looks at principal steps of the operation, potential safety/health hazards for each step, and recommended controls for each hazard. In addition, a listing of equipment to be used onsite, inspection requirements, and training requirements for operation of equipment will be included.
 - 2) Analyses will define the activities being performed, identify the sequences of Work, the specific hazards anticipated, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level.
 - 3) Work will not begin until the hazard analysis for each Work activity has been reviewed and accepted by the Owner's Representative.
 - b. Training requirements are as follows (29 CFR 1910.120.(e)):
 - 1) 40-hour hazardous waste training.
 - 2) 8-hour hazardous waste refresher training within the last 12 months.
 - 3) Site-specific training including names of personnel and alternates responsible for site safety and health; safety, health, and other hazards identified in the AHA; use of PPE; work practices to minimize risks from hazards; medical surveillance requirements and recognition of symptoms and signs which might indicate overexposure to hazards; and decontamination procedures.
 - c. Personal Protective Equipment: A specific list of PPE to be used by Contractor employees for each site task and operation plus the assigned level of protection and criteria for upgrading or downgrading a task will be included.
 - d. Medical Surveillance:
 - 1) As a minimum, list the requirements for annual and any site-specific physical requirements for contaminants of concern on the site.
 - 2) Provide name, route map, and contact number for emergency medical services available in case of a suspected exposure or emergency.
 - 3) Drug testing will be completed for the Contractor's and all subcontractors' onsite employees within 30 days prior to arrival onsite.

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- e. Site Control: Implement appropriate site controls to isolate areas with hazardous substances or physical hazards before Work begins. Establish Work zones, use of the “buddy” system, site communications including emergency signals, and identification of standard operating procedures.
- f. Decontamination:
 - 1) Written procedures will be developed and implemented before and during site activities based upon actual site conditions. Decontamination for hand tools, light equipment and personnel will be described in the Contractor’s AHAs. Decontamination for heavy equipment and trucks will be described in the Contractor’s Work Plan.
 - 2) All trucks or other equipment entering the exclusion zones at either the property excavations or the waste staging area must be decontaminated prior to exiting the exclusion zones. This includes, but is not limited to, trucks transporting contaminated soil from property excavation areas to the FA. The Contractor is responsible for conducting all truck decontamination and management of decontamination wastes.
 - 3) All trucks or other equipment leaving the FA with borrow source material must be decontaminated prior to leaving the FA to avoid tracking material from the FA into the surrounding properties.
 - 3) All equipment leaving the site will be decontaminated and decontamination wastes will be managed, contained and disposed of by the Contractor in a manner approved by the Owner’s Representative in the appropriate plans.
- g. Spill Control:
 - 1) Onsite spills: Requirements for spill containment procedures are described in the Owner’s Representative’s Health and Safety Plan; these will be followed when developing the Contractor’s procedures.
 - 2) Offsite spills: Describe procedures for containment of offsite spills in detail in the Transportation and Disposal Plan; a general description of these procedures will be described in the Contractor’s Health and Safety Plan.
 - 3) All personnel leaving the exclusion area will perform the required decontamination. The Contractor DSC will observe these operations and ensure proper decontamination procedures are being followed. These procedures will be followed every time personnel leave the site.
 - 4) PPE will be cleaned or disposed of in a method specified in the Contractor’s HASP.

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- h. Emergency response plan will include the following:
 - 1) Pre-emergency planning including designation of personnel roles, responsibilities, emergency recognition, safe places of refuge or gathering, evacuation routes, emergency decontamination procedures, alerting procedure, and availability of first aid and medical treatment.
 - 2) Site emergency equipment including first aid kits, 15-minute eyewash, 20-pound fire extinguishers, blood borne pathogen kit, emergency map, designated emergency vehicle, and listing of trained first aid and CPR personnel.
 - 3) Procedures for reporting incidents, emergency communications, and testing of the site emergency notification system.
 - 4) Post-emergency evaluation, an evaluation looking at how resources came into play, response of outside sources, and steps to improve the process.
 - i. Confined Space Entry, if required by Site Activities: This includes the specific procedure following 29 CFR 1910.146, including training, site isolation, permit procedures, air monitoring, and emergency rescue.
 - j. Spill Containment Program:
 - 1) Written spill containment program that is targeted at the quantities and types of material brought to the site by the Contractor or as a result of stockpiling or tankage of site materials.
 - 2) Spill control materials in adequate quantities to control solid or liquid spills.
 - 3) Drums or containers for recovery of spilled material or rapidly available local resources to provide these materials.
 - k. Activity Hazard Analyses:
 - 1) The Contractor will prepare AHAs to review the hazards posed and required hazard control procedures for activities planned during the Work.
 - 2) During the daily safety meeting, the Contractor's supervisor will brief their Work crew on the AHA, which will include the day's planned tasks, tools, equipment, and materials that will be used, along with hazards posed and required hazard control procedures for each day's planned activities.
3. References:
- a. OSHA 29 CFR 1910, General Industry Standards.
 - b. OSHA 29 CFR 1926, Construction Industry Standards.

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1.07 CONTRACT TIME

- A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
- B. Substantial Completion:
 - 1. The Work is anticipated to be performed in 2018 and 2019.
 - 2. Substantial Completion for each property will occur after site restoration Work has been completed, including the Contractor maintenance period, and the Residential Post-Construction Meeting is conducted with the property owners, Owner's Representative, Subcontractor, and USEPA, if desired.
 - 3. Project Substantial Completion will occur when remediation and restoration is complete for all properties, include maintenance, watering and punch list work complete and property owners have signed off on work.

1.08 SITE WORK HOURS

- A. Residential Areas: Work can be performed in the residential areas from 7:00 AM – 6:00 PM Monday through Friday.
- B. Facility Area: Work can be performed at the FA from 6:00 AM – 6:00 PM Monday through Friday.
- C. Weekend work hours or other alternative work hours must be approved in writing by the Owner's Representative.
- D. Nothing in this Section will be construed as approval of overtime work hours.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SUBMITTALS

A. Informational Submittals:

1. Schedule of Values: Submit on form approved by Owner's Representative.
2. Schedule of Estimated Progress Payments:
 - a. Submit with initially acceptable Schedule of Values.
 - b. Submit adjustments thereto with Application for Payment.
3. Application for Payment.
4. Final Application for Payment.

1.02 SCHEDULE OF VALUES

A. On a weekly basis the will provide an updated Schedule of Values (SOV) as described in Section 01 11 00, Summary of Work.

1. The SOV will be reviewed weekly during each weekly progress meeting with the Owner's Representative. Based on the weekly review, the Contractor will provide any additional documentation needed to support the accuracy of the SOV. Based on the weekly review, the SOV will be revised if needed.
2. The Owner's Representative will determine time periods for reporting of quantities and values on the SOV.
3. The SOV will correspond to each definable feature of work (DFOW).

B. Unit Price Work: Reflect unit price quantity and price breakdown from conformed Bid Form.

C. Lump Sum Work:

1. List bonds and insurance premiums, mobilization, demobilization, preliminary and detailed progress schedule preparation, project coordination and contract closeout separately.
2. Provide adequate breakdown of lump sum work specified in sections "Summary of Work" and "Temporary Facilities and Controls," distributed for payment over the construction duration.

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- D. An unbalanced or front-end loaded compensation schedule will not be acceptable.
- E. Summation of the complete Schedule of Values representing all the Work must equal the Contract Price.

1.03 MEASUREMENT—GENERAL

- A. Whenever pay quantities of material are determined by weight, the weight or load slip will be obtained from weigher using properly certified scales and delivered to Owner's Representative as documentation.
- B. Vehicles used to haul material being paid for by weight will be weighed empty daily and at such additional times as required by Owner's Representative. Each vehicle will bear a plainly legible identification mark.
- C. Excavation quantity and transport to the FA will be based on ground elevations. Field surveys will be made by a licensed surveyor in the State of Illinois retained by the Contractor to confirm actual elevations and determine quantities for payment.
- D. Quantities for backfilled materials, including general backfill, topsoil, select topsoil, and gravel, will be based on surveyed in-place volumes backfilled at the site.
 - 1. Payment will not be made for rejected or unused materials.
 - 2. Provide total surveyed backfill volume and identify increments of backfill material depths.
- E. Quantities for materials disposed of offsite will be based on weight tickets of material transported from the site for offsite disposal.
 - 1. Scales for payment will be certified by the State of Illinois and be properly calibrated and maintained.
- F. Units of measure shown on Bid Form will be as follows, unless specified otherwise.

Item	Method of Measurement
CY	Cubic Yard—Field Measure by survey within limits specified or shown
EA	Each—Field Count by Owner's Representative

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Item	Method of Measurement
HR	Miscellaneous Crew Hour or Standby Time —Billable only with prior written authorization from Owner's Representative
LS	Lump Sum
SF	Square Foot
TON	Ton—Weight Measure by Scale (2,000 pounds)

1.04 PAYMENT

- A. Payment for all Lump Sum Work shown or specified in Contract Documents is included in the Contract Price. Payment will be based on a percentage complete basis for each line item of the accepted Schedule of Values.

1.05 NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS

- A. Payment will not be made for following:
1. Loading, hauling, and disposing of rejected material.
 2. Quantities of material wasted or disposed of in manner not called for under Contract Documents.
 3. Rejected loads of material, including material rejected after it has been placed by reason of failure of Contractor to conform to provisions of Contract Documents.
 4. Material not unloaded from transporting vehicle.
 5. Defective Work not accepted by Owner's Representative.
 6. Material remaining on hand after completion of Work.
 7. Miscellaneous Crew or Standby time not approved in writing and in advance by the Owner's Representative.

1.06 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

- A. Partial Payment: No partial payments will be made for materials and equipment delivered or stored unless Shop Drawings and preliminary operation and maintenance data is acceptable to Owner's Representative.
- B. Final Payment: Will be made only for products incorporated in Work; remaining products, for which partial payments have been made, will revert to Owner's Representative unless otherwise agreed, and partial payments made for those items will be deducted from final payment.

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1.07 STANDBY TIME

- A. Standby Time includes all necessary costs including, but not limited to taxes, labor, equipment and materials incurred when the crew is unable to perform work for a portion of a work day exceeding 30 minutes. Standby time will only apply after the time that Owner's Representative has indicated that a property is ready for the appropriate phase of work and activities at the property under the direction of Owner's Representative prevent the Contractor from performing the work, and no other work is possible for the Contractor's crew.
- B. Authorized only with prior written approval from Owner's Representative.
- C. Paid only at the approved fixed unit rate per hour on the Compensation Schedule.

1.08 MISCELLANEOUS CREW SUPPORT

- A. Miscellaneous crew support includes taxes, labor, and equipment to perform minor work at a property at the direction of Owner's Representative.
- B. Miscellaneous crew support is applicable to tasks where the Contractor has completed the Work to within Contract Requirements and additional miscellaneous work is required to meet an Owner-approved request that is not within the scope of any other contract line item on the Compensation Schedule.
- C. Authorized only with prior written approval from Owner's Representative.
- D. Paid only at the approved fixed unit rate per hour on the Compensation Schedule.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SURROUNDING PROPERTIES REMEDIAL DESIGN
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SECTION 01 31 13
PROJECT COORDINATION

PART 1 GENERAL

1.01 GENERAL

- A. Property Owner Meetings: The Owner's Representative, Contractor, and a qualified representative to identify plant species for replacement will attend meetings with the property owner as described below and in Section 01 31 19, Project Meetings. Property maps developed by the Engineer using information gathered from the remedial investigation, supplemental remedial investigation, and predesign sampling, will be updated by the Contractor based on a survey of each property and an initial property assessment meeting with the Property Owner.
 - 1. Initial Preconstruction Meeting will be used to document the existing conditions at the property. The Contractor will determine the means and methods and identify modifications to the design plan to implement the work. A qualified representative (Contractor representative or landscaper retained by the Contractor) will prepare a tree and plant inventory to identify the existing vegetation that is designated for removal and will determine the means and method to implement the restoration work.
 - 2. Second Preconstruction Meeting will be used to document Property Owner approval of the work to be performed at the property.
 - 3. Post-construction Meeting will be held with the Property Owner to document issues identified during the performance of work, outstanding punch list items and substantial completion at the property.
- B. Land surveying will be used to document the grade prior to, during, and after construction.
 - 1. Survey No. 1–Preconstruction Survey: To be performed by a Professional Land Surveyor retained by the Contractor to provide documentation for excavation depths and restoration. A minimum 10-by-10-foot grid will be established and then used to measure pre-excavation elevations.

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2. Survey No. 2–Post-Excavation Survey: To be performed by a Professional Land Surveyor retained by the Contractor after design extents of excavation have been reached as specified in 31 23 16, Excavation. Survey will be performed on the survey grid (x and y coordinates) established during Survey No. 1 to the extent practicable.
3. Survey No. 3–Post-Backfill Survey: To be performed by a Professional Land Surveyor retained by the Contractor after completion of backfill and topsoil activities as specified in 31 23 23, Fill and Backfill and 32 91 13, Topsoil Preparation. Survey will be performed on the survey grid (x and y coordinates) used during Surveys No. 1 and 2 to the extent practicable.

C. Utility locates.

1. Contractor will perform utility locates for each property through the local one-call system (JULIE) and a 3rd party utility locate subcontractor for each property where intrusive activities will occur.
2. Utility locates will be completed prior to start of intrusive activities as specified in 31 10 00, Site Preparation, 31 23 16, Excavation, and 32 93 00, Plants.

1.02 SUBMITTALS

A. Informational:

1. Utility locate tickets:
 - a. Documentation of completed utility locates for both JULIE and 3rd party utility locate.
 - b. Submit one copy to Owner's Representative, within 2 work days prior to beginning any intrusive activities.
2. Revised property drawings showing underground utilities from 3rd party utility locate.

B. Action:

1. Revised Property Drawing showing existing conditions as modified during the Initial Preconstruction Meeting:
 - a. Adobe Acrobat 9.0 or compatible version.
 - b. Submitted within three (3) work days after the Initial Preconstruction Meeting.
2. Survey Documentation:
 - a. Survey No. 1–Pre-Excavation Survey: Submit drawing showing grid survey point locations and coordinates with elevations.

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- b. Survey No. 2–Post-Excavation Survey: Submit drawing and coordinates with elevations and calculated volume of excavated soil.
- c. Survey No. 3–Post-Backfill Survey (following completion of backfill activities, including placement of backfill, topsoil, select topsoil, and gravel): Submit drawing and coordinates with post-construction grade, excavation area at final grade and calculated volume of backfill material. Survey is to be performed prior to placement of sod.
- d. All Surveys: The following will be adhered to for all survey materials submitted:
 - 1) Coordinates will be provided in the appropriate State Plane Coordinate System and zone (latest adjustment) for the area as discussed below in 1.06 Reference Points and Surveys.
 - 2) Annotated coordinates will be provided for at least 2 control points.
 - 3) A property drawing in Adobe Acrobat 9.0 or compatible version showing property features with survey points and elevations will be provided for each submittal.
- 3. Red-Line Drawings showing deviations from the property drawing approved by the Owner’s Representative, Contractor, Subcontractor, and Property Owner in the Second Preconstruction Meeting. Changes will be clouded and dated to reflect and record actual changes made during construction including modifications to the excavation extents, including landscaped areas, easements, or other areas, changes in tree, shrub, perennial removal, fill encountered during excavation or other similar factors that alter the lateral or vertical excavation extents. Legibly and clearly describe change by graphic line and note as required:
 - a. Green when showing information deleted from Drawings.
 - b. Red when showing information added to Drawings.
 - c. Blue and circled in blue to show notes.
- 4. All AutoCAD elements to be set to by-level including color, line type, and line weight.
- 5. Points files with Point Number, Northing, Easting, Elevation and Point Description for all surveys in format to be specified by Owner’s Representative.

1.03 UTILITY NOTIFICATION AND COORDINATION

- A. The Contractor will coordinate utility clearance through JULIE and a 3rd party utility locate subcontractor. The Contractor will verify that utilities have been identified and marked prior to beginning intrusive activities on each property and protect the utilities from damage during construction and restoration.

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- B. The Contractor will notify applicable utilities prior to commencing Work and if damage occurs, or if conflicts or emergencies arise during Work.
- C. Property Owners and Tenants will be asked about the presence and location of personal utilities and plastic lines during the Initial Preconstruction Meeting. The 3rd party utility locate will confirm personal utility locations, as possible. The Contractor will use alternate soft techniques to confirm personal utility locations unable to be confirmed by the 3rd party locate.

1.04 PROPERTY ACCESS AND SERVICES

- A. The Owner's Representative will obtain property owner-signed access agreements and verify current property ownership.
- B. Do not proceed with Work at a property prior to obtaining Property Owner's and Property Owner's approval of the SOW, conditions, and duration of such work in the Second Preconstruction Meeting.
- C. During construction, it is expected that relocation of objects, materials, and trash will be necessary. Interfering objects that will require removal, storage, or disposal will be identified and documented in the preconstruction meeting with the Property Owner, Owner's Representative, Contractor, Subcontractor, and Tenant, as appropriate. Objects identified for storage will be returned to the property and reinstalled by the Contractor during restoration.
- D. Two points of continuous access for Property Owners and Tenants will be maintained when possible, with one point of continuous access at all times. Schedule and conduct activities to enable access and egress to homes by Property Owner and Tenants.
- E. Openings in fences, created by the Contractor for construction access or other purposes, will be secured at the end of each work day.
- F. Perform Work continuously and as required to prevent interruption of services to residential homes (U.S. Postal deliveries, visitors, and others).
- G. Plan and coordinate Work in and around the street and alleys to allow City services such as street cleaning and garbage pickup.
- H. Coordinate street parking for excavation and backfill equipment.
- I. Do not close lines, open or close valves, or take other action which would affect the operation of existing systems without authorization from local utility companies and Owner's Representative.

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- J. When necessary, provide various temporary services, utilities, connections, access, and similar items to maintain continuous operations for Property Owners and Tenant.

1.05 RESIDENTIAL PRECONSTRUCTION MEETINGS

- A. Residential Preconstruction Meeting: The Owner's Representative, Contractor, and any required Subcontractors, will attend Initial Preconstruction Meetings with the Property Owner and Tenant, as appropriate, onsite at the property where Work will be performed. During the meetings, information will be gathered to clearly define the limits of excavation and schedule.
 - 1. During the initial meeting, the Owner's Representative will take video records and/or photographs of the physical site, structures, fencing, poles, trees, shrubs, concrete sidewalks and slabs showing their condition prior to start of the Work.
 - 2. Notations will be made by hand on the property drawing during the initial meeting and will include additional notes, concerns and understandings discussed with the Property Owner.
 - 3. A plant inventory will be completed by the a qualified Contractor representative or Subcontractor representative documenting the trees, shrubs and perennials present in the yard areas where work will be performed. If the plant inventory cannot be completed at the initial meeting due to dormancy or similar issue, this will be conducted at an independent property visit by the Contractor or Subcontractor without the Property Owner.
 - 4. If significant changes to the design (significance of a change will be determined by the Owner's Representative) are discussed during the Initial Preconstruction Meeting, the proposed changes will be documented by the Owner's Representative and submitted to the Owner for approval. Once Owner has provided approval, Contractor will proceed with incorporation of changes.
 - 5. The Contractor will incorporate the hand notations on the drawing from the initial meeting into an electronic format. The Contractor will compile a preconstruction package consisting of the finalized drawing, notes, inventories and a CD/DVD with photographs and/or video taken during the Initial Preconstruction Meeting.
 - 6. The Contractor will use information gathered during the initial meeting to determine the means and methods to implement the required work at the property.

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7. The Owner's Representative, Contractor, and Property Owner will review the finalized drawing, notes, and inventories for the property, and sign the Property Owner Agreement during a Second Preconstruction Meeting indicating concurrence and approval to proceed.

B. Examination:

1. Complete a thorough examination of pre-existing conditions including existing buildings, structures, fences and other improvements in vicinity of Work, as applicable, which could be damaged by construction operations or limit access for equipment. Request Property Owner or Tenant demonstrate function of existing facilities that could be damaged by operations.
2. Schedule of Work.
3. Access.
4. Removals.
5. Restoration.
6. Security.
7. Other Conditions.

C. Documentation:

1. Owner's Representative will complete the Preconstruction Property Assessment Checklist.
2. Property Owner Agreement describes the property and Work to be performed and will be signed by the Property Owner, Owner's Representative, and Contractor.
3. A drawing, to scale, of site features and extents of excavation for each property will be provided to the Engineer or Owner's Representative at the time of contract award.
4. After the Initial Preconstruction Meeting, the Contractor will be required to revise and submit the Property Drawing for approval, at a minimum, the following information:
 - a. Site features.
 - b. Excavation area(s) and proposed access to the area(s).
 - c. Location of utilities and other site hazards.
 - d. Proposed fence removal (length and type).
 - e. Tree, shrub, perennial, garden and/or other vegetation removal or protection.
 - f. Restoration and Replacement Notes.
 - g. Each drawing will be reviewed and approved by the Owner's Representative and/or Engineer prior to authorization for beginning Work at the individual property.

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5. Documentation (e.g., photographs, videos, drawings) will be used as indisputable evidence in ascertaining whether and to what extent damage occurred as a result of Contractor's operations, and is for the protection of Property Owners, adjacent property owners, Contractor, Subcontractor, Owner and Owner's Representative.

1.06 REFERENCE POINTS AND SURVEYS

- A. The Preconstruction, Post-Excavation and Post-Construction surveys (Survey Nos. 1, 2 and 3) will be completed under the direct supervision of a Professional Land Surveyor retained by the Contractor and who is licensed and in good standing with the State of Illinois.
 1. Establish horizontal reference points with temporary bench marks and reference points to lay out and record Work. The horizontal excavation extents will be within 0.0 to +0.2 of the excavation extent field markings as approved during the Initial Preconstruction Meeting and recorded in Survey No. 1.
 2. Control points established during Survey No. 1 will be used to the extent practicable in performance of Survey Nos. 2 and 3.
 3. Grade staking will be performed under the direct supervision of the Professional Land Surveyor retained by the Contractor. Grade staking will be used for assessment of grade during work performed as specified in 31 23 16, Excavation, 31 23 23, Fill and Backfill and 32 91 13, Topsoil Preparation.
 4. Grade control monitoring measurements performed during construction can be completed by the Contractor.
- B. Surveying Control and Tolerances:
 1. Horizontal Control work will be performed using either standard surveying techniques or Global Positioning System (GPS) techniques meeting the specification requirements outlined in this scope.
 - a. If standard surveying techniques are used, all horizontal control work will comply with Third Order Class I or better, as outlined in the FGDC Geospatial Positioning Accuracy Standards, Part 4: Standards for Architecture, Engineering, Construction (A/E/C), and Facility Management.
 - b. If GPS is used, the relative horizontal accuracy will conform to the FGDC Geospatial Positioning Accuracy Standards, Part 2: National Standard for Spatial Data Accuracy. GPS cannot be used for elevations on control points.

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2. Horizontal control work will comply with Horizontal control will be based on the Universal Transverse Mercator (UTM), North American Datum (NAD) 1983, Zone 16N (Feet) Vertical control will be based on the North American Vertical Datum 1988 (NAVD 88).
3. Vertical Control work will be Second Order Class II or better, as outlined in the FGDC Geospatial Positioning Accuracy Standards, Part 4: Standards for Architecture, Engineering, Construction (A/E/C) and Facility Management.
4. The units of measurement will be in US Survey Feet. Surveyed elevations for the surveys will be accurate to within 0.05 feet on natural ground.

C. Required Services:

1. Establish horizontal reference points with temporary bench marks and reference points for use as necessary to lay out and record Work.
2. Furnish all labor, equipment, and materials required to perform Work. Work will be completed in compliance with current Federal, State, and Local regulations and in accordance with standard industry practices.
3. Locate established bench marks to tie into and document elevations during and after construction.
4. Survey No. 1: Horizontal and vertical control of site, structures, fences, and limits of excavation prior to starting work. Property boundaries will be identified as necessary as determined by posts or markers identifying property corners. Where property boundaries cannot be identified by property features, a legal property boundary survey will be performed at the direction of the Owner's Representative.
5. Survey No. 2: Record actual bottom of excavation elevation at the control points established during Survey No. 1, at points where a change in grade occurs (such as due to utilities or 6-inch manual excavation within 8-foot radius of trees) and at horizontal limits prior to beginning fill and backfill operations. Calculate excavated volumes of work performed.
6. Backfill Grade Control: Provide spot elevations over footprint of backfilled area to show general backfill has been placed and compacted to within tolerances specified in Section 31 23 23, Fill and Backfill.
7. Survey No. 3: Record elevations at the control points established during Survey No. 1 and additional points required to maintain a 10-foot survey grid within the excavation extents to show physical features, breaks, and grade (as determined by the Owner's Representative) following backfill and topsoil placement. Both vertical and horizontal control of structures will be included. Calculate the backfill volumes and provide areas at final grade for the excavation extents.

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D. Subcontractor's Responsibilities:

1. Provide competent employee(s), tools, stakes, and other equipment and materials required to:
 - a. Provide survey and measurements required to determine excavation and backfilling activities have been completed.
 - b. Maintain complete accurate log of survey as it progresses.
 - c. Obtain measurements of excavation for removed volume purposes.
 - d. Provide survey and measurements required to document positive drainage following site restoration.
 - e. Calculate excavation and backfill volume based on measurements for quality checks with calculated volumes.
2. Submit survey documentation, including the following:
 - a. Within 3 work days of each survey, submit an updated property drawing in Adobe Acrobat 9.0 or compatible version showing property features with survey points and elevations provided for each submittal.
 - b. Within 7 work days of each survey, submit the following survey documentation:
 - 1) Point file of all survey information for the property with all X, Y, and Z coordinates listed to the nearest 0.01 foot. The information will contain the station ID, the horizontal and vertical coordinate information, and feature codes.
 - 2) Volume calculations.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SUPPLEMENT

- A. The supplements listed below, following "End of Section," are part of this Specification.
1. Form: Preconstruction Property Assessment Checklist.
 2. Form: Property Owner Agreement.
 3. Form: Old American Zinc Surrounding Properties Substantial Completion.

END OF SECTION

Preconstruction Property Assessment Checklist

Property Address	_____	Date / Time	_____
Property Owner(s) Present	_____	Owner's Rep	_____
	_____	Contractor	_____
Tenant(s) Present	_____	Subcontractor(s)	_____
	_____		_____
USEPA	_____		_____
	_____		_____
Other Attendees	_____		_____

Property Information

1. Type of Property ☐ Residential—Single Family ☐ Residential—Multi-Family ☐ Vacant Lot
2. Owner Occupied ☐ Yes ☐ No
3. Rental Property ☐ Yes ☐ No
 - a. If Yes, are there currently any Tenants Renting at Property ☐ Yes ☐ No
 - b. If Yes, has the Tenant been notified of the cleanup ☐ Yes ☐ No
4. Areas Requiring Remediation: ☐ Easement ☐ Front Yard ☐ Back Yard ☐ Side Yard
 ☐ Section A ☐ Section B ☐ Section C ☐ Section D
 ☐ FY1 ☐ BY1 ☐ FY2 ☐ BY2
 ☐ Other Yard Area (specify: _____)
5. Does the property owner have any knowledge of any drainage problems on the property (i.e. ponding water during rain, surface water runoff onto property, surface water runoff flooding neighboring property, water in basement)? ☐ Yes ☐ No
Location _____ Description _____
Location _____ Description _____
Location _____ Description _____
6. Will the property owner allow us to inspect and take photos of the basement for structural or drainage issues?
☐ Yes ☐ No
7. Is there a dog at the property? ☐ Yes ☐ No
 - a. Arrangements should be made for the dog to remain indoors during the work at the property.
 - b. The dog should be kept out of the area after it is restored for approximately 4 weeks to allow the grass to establish.

8. Property Owner/Tenant Special Requests:

Landscaping

1. Areas requiring landscaping after remediation is complete:

- ☐ Easement ☐ Front Yard ☐ Back Yard ☐ Side Yard
☐ Section A ☐ Section B ☐ Section C ☐ Section D
☐ FY1 ☐ BY1 ☐ FY2 ☐ BY2
☐ Other Yard Area (specify: _____)

2. Are there plants to be removed within the excavation area(s)? ☐ Yes ☐ No

- a. If Yes, identify areas with plants on property sketch for landscaper to inventory. Notify landscaper to complete inventory prior to 2nd Preconstruction Meeting.

3. Are there plants that the property owner will transplant?

- Perennials ☐ Yes ☐ No
Shrubs ☐ Yes ☐ No
Trees ☐ Yes ☐ No

See Plant Inventory for more detailed information regarding location and description of plants.

4. Are there plants present in the excavation that will be removed and replaced?

- Perennials ☐ Yes ☐ No
Shrubs ☐ Yes ☐ No
Trees ☐ Yes ☐ No

See Plant Inventory for more detailed information regarding location and description of plants.

5. Are there perennials present in the excavation area that are not in bloom? ☐ Yes ☐ No

6. Are there plants in the excavation area that will be removed and not replaced?

- Perennials ☐ Yes ☐ No
Shrubs ☐ Yes ☐ No
Trees ☐ Yes ☐ No

See Plant Inventory for more detailed information regarding location and description of plants.

7. Are there plants that will remain within the excavation area?

- Perennials ☐ Yes ☐ No
Shrubs ☐ Yes ☐ No
Trees ☐ Yes ☐ No

See Plant Inventory for more detailed information regarding location and description of plants.

8. Describe special landscaping features (mulch, borders, or other):

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Additional Landscaping Comments

General

1. Is the property owner able to confirm the property boundaries?
- ☐Yes
- ☐No
2. Is a Surveyor needed to locate property boundaries?
- ☐Yes
- ☐No

Comments

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Yard Area: _____

1. Require remediation? ☐Yes ☐No
2. Will be used to access other areas requiring remediation? ☐Yes ☐No ☐N/A
3. Yard Area Permanent Structures ☐Driveway ☐Sidewalks ☐Concrete Slabs ☐Patio
☐Pavers/Brick ☐A/C Unit ☐Other
Comments: _____
4. Non-permanent Features to be Removed/Replaced ☐Pavers/Bricks
☐Landscaping Borders ☐Other
Other / Comments: _____
5. Structures Present ☐Residence ☐Garage ☐Dog House/Kennel ☐Prefabricated storage shed
☐Constructed storage shed ☐Deck ☐Stairs ☐Other _____
Comments: _____
6. Alley Access ☐Yes ☐No
Comments: _____
7. Any Obstructions Present in Yard Area? ☐Yes ☐No
☐Fence ☐Playsets ☐Stairs (number) _____ ☐Up ☐Down ☐Landscaping
☐Retaining Wall Material _____ Height _____ ☐Vehicles (mobile or immobile)
Comments: _____
8. Fence Type, if present ☐Chain Link ☐Wood ☐Wrought iron ☐Other _____
☐Gate Present Width _____ inches Height _____ inches
Comments: _____
Location: _____
9. Fence Anchored to Building ? ☐Yes ☐Property ☐Neighboring ☐No
10. Property boundary markers observed
☐Fence ☐Structure ☐Survey marker ☐Landscaping ☐Pavement
☐Ground covers ☐Owner's knowledge
11. Overhead utilities or obstructions? ☐Yes (show on sketch) ☐No
☐Electrical ☐Telephone ☐Cable ☐Other _____
12. Evidence of Underground Utilities (visible conduit, remote outlet, shutoff)? ☐Yes (show on sketch) ☐No
☐Gas ☐Electrical ☐Water ☐Sewer ☐Other _____
Other / Comments: _____
13. Does the property owner have knowledge or are there indications of underground items (USTs, sprinkler systems, cisterns, wells, former pets, etc.) ☐Yes (show on sketch) ☐No
Location _____ Description _____
Location _____ Description _____
14. Description of pools, gazebos, sheds, flag poles or other:
Location _____ Description _____
Location _____ Description _____

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Yard Area: _____

1. Require remediation? ☐Yes ☐No
2. Will be used to access other areas requiring remediation? ☐Yes ☐No ☐N/A
3. Yard Area Permanent Structures ☐Driveway ☐Sidewalks ☐Concrete Slabs ☐Patio
☐Pavers/Bricks ☐A/C Unit ☐Other
Comments: _____
4. Non-permanent Features to be Removed/Replaced ☐Pavers/Bricks
☐Landscaping Borders ☐Other
Other / Comments: _____
5. Structures Present ☐Residence ☐Garage ☐Dog House/Kennel ☐Prefabricated storage shed
☐Constructed storage shed ☐Deck ☐Stairs ☐Other _____
Comments: _____
6. Alley Access ☐Yes ☐No
Comments: _____
7. Any Obstructions Present in Yard Area? ☐Yes ☐No
☐Fence ☐Playsets ☐Stairs (number) _____ ☐Up ☐Down ☐Landscaping
☐Retaining Wall Material _____ Height _____ ☐Vehicles (mobile or immobile)
Comments: _____
8. Fence Type, if present ☐Chain Link ☐Wood ☐Wrought iron ☐Other _____
☐Gate Present Width _____ inches Height _____ inches
Comments: _____
Location: _____
9. Fence Anchored to Building ? ☐Yes ☐Property ☐Neighboring ☐No
10. Property boundary markers observed
☐Fence ☐Structure ☐Survey marker ☐Landscaping ☐Pavement
☐Ground covers ☐Owner's knowledge
11. Overhead utilities or obstructions? ☐Yes (show on sketch) ☐No
☐Electrical ☐Telephone ☐Cable ☐Other _____
12. Evidence of Underground Utilities (visible conduit, remote outlet, shutoff)? ☐Yes (show on sketch) ☐No
☐Gas ☐Electrical ☐Water ☐Sewer ☐Other _____
Other / Comments: _____
13. Does the property owner have knowledge or are there indications of underground items (USTs, sprinkler systems, wells, former pets, etc.) ☐Yes (show on sketch) ☐No
Location _____ Description _____
Location _____ Description _____
14. Description of pools, gazebos, sheds, flag poles or other:
Location _____ Description _____
Location _____ Description _____

SURROUNDING PROPERTIES REMEDIAL DESIGN
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Yard Area: _____

1. Require remediation? ☐Yes ☐No
2. Will be used to access other areas requiring remediation? ☐Yes ☐No ☐N/A
3. Yard Area Permanent Structures ☐Driveway ☐Sidewalks ☐Concrete Slabs ☐Patio
☐Pavers/Bricks ☐A/C Unit ☐Other
Comments: _____
4. Non-permanent Features to be Removed/Replaced ☐Pavers/Bricks
☐Landscaping Borders ☐Other
Other / Comments: _____
5. Structures Present ☐Residence ☐Garage ☐Dog House/Kennel ☐Prefabricated storage shed
☐Constructed storage shed ☐Deck ☐Stairs ☐Other _____
Comments: _____
6. Alley Access ☐Yes ☐No
Comments: _____
7. Any Obstructions Present in Yard Area? ☐Yes ☐No
☐Fence ☐Playsets ☐Stairs (number) _____ ☐Up ☐Down ☐Landscaping
☐Retaining Wall Material _____ Height _____ ☐Vehicles (mobile or immobile)
Comments: _____
8. Fence Type, if present ☐Chain Link ☐Wood ☐Wrought iron ☐Other _____
☐Gate Present Width _____ inches Height _____ inches
Comments: _____
Location: _____
9. Fence Anchored to Building ? ☐Yes ☐Property ☐Neighboring ☐No
10. Property boundary markers observed
☐Fence ☐Structure ☐Survey marker ☐Landscaping ☐Pavement
☐Ground covers ☐Owner's knowledge
11. Overhead utilities or obstructions? ☐Yes (show on sketch) ☐No
☐Electrical ☐Telephone ☐Cable ☐Other _____
12. Evidence of Underground Utilities (visible conduit, remote outlet, shutoff)? ☐Yes (show on sketch) ☐No
☐Gas ☐Electrical ☐Water ☐Sewer ☐Other _____
Other / Comments: _____
13. Does the property owner have knowledge or are there indications of underground items (USTs, sprinkler systems, wells, former pets, etc.) ☐Yes (show on sketch) ☐No
Location _____ Description _____
Location _____ Description _____
14. Description of pools, gazebos, sheds, flag poles or other:
Location _____ Description _____
Location _____ Description _____

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC SUPERFUND SITE

Yard Area: _____

1. Require remediation? ☐Yes ☐No
2. Will be used to access other areas requiring remediation? ☐Yes ☐No ☐N/A
3. Yard Area Permanent Structures ☐Driveway ☐Sidewalks ☐Concrete Slabs ☐Patio
☐Pavers/Bricks ☐A/C Unit ☐Other _____
Comments: _____
4. Non-permanent Features to be Removed/Replaced ☐Pavers/Bricks ☐Landscaping Borders ☐Other
Other / Comments: _____
5. Structures Present ☐Residence ☐Garage ☐Dog House/Kennel ☐Prefabricated storage shed
☐Constructed storage shed ☐Deck ☐Stairs ☐Other _____
Comments: _____
6. Alley Access ☐Yes ☐No
Comments: _____
7. Any Obstructions Present in Yard Area? ☐Yes ☐No
☐Fence ☐Playsets ☐Stairs (number) _____ ☐Up ☐Down ☐Landscaping
☐Retaining Wall Material _____ Height _____ ☐Vehicles (mobile or immobile)
Comments: _____
8. Fence Type, if present ☐Chain Link ☐Wood ☐Wrought iron ☐Other _____
☐Gate Present Width _____ inches Height _____ inches
Comments: _____
Location: _____
9. Fence Anchored to Building ? ☐Yes ☐Property ☐Neighboring ☐No
10. Property boundary markers observed
☐Fence ☐Structure ☐Survey marker ☐Landscaping ☐Pavement
☐Ground covers ☐Owner's knowledge
11. Overhead utilities or obstructions? ☐Yes (show on sketch) ☐No
☐Electrical ☐Telephone ☐Cable ☐Other _____
12. Evidence of Underground Utilities (visible conduit, remote outlet, shutoff)? ☐Yes (show on sketch) ☐No
☐Gas ☐Electrical ☐Water ☐Sewer ☐Other _____
Other / Comments: _____
13. Does the property owner have knowledge or are there indications of underground items (USTs, sprinkler systems, wells, former pets, etc.) ☐Yes (show on sketch) ☐No
Location _____ Description _____
Location _____ Description _____
14. Description of pools, gazebos, sheds, flag poles or other:
Location _____ Description _____
Location _____ Description _____

Property Inventory

Address _____ Date _____

[illegible]

Perennial/Shrub/Tree Inventory

Address _____ Date _____ Page ____ of ____

[illegible]

Note: Mark locations on a map for reference.

Photo Log

Address _____ Date _____

Picture Number	Description	Looking

Property Owner Agreement

Property Owner(s): _____

Address: _____

Date of Meeting: _____ Time of Meeting: _____

Initial Residential Preconstruction Documentation provided to Owner, including:

Photo CD or Prints and Photo Log

Owner Initials Confirming Receipt _____

Property Inventory Log

Owner Initials Confirming Receipt _____

Plant Inventory Log

Owner Initials Confirming Receipt _____

Revised Construction Drawing

Owner Initials Confirming Receipt _____

Estimated Duration for Construction: _____ Calendar Days (weather dependent)

Description of Property Access during Construction _____

Restoration Activities Planned: _____

Contractor will excavate the following areas as shown on the final site drawing:

☐ Easement

☐ Front Yard

☐ Back Yard

☐ Side Yard

☐ Section A

☐ Section B

☐ Section C

☐ Section D

☐ FY1

☐ BY1

☐ FY2

☐ BY2

☐ Other Yard (specify: _____)

Description of Other Areas _____

List of buried items identified on the property.

Location _____ Description _____

Location _____ Description _____

Location _____ Description _____

Location _____ Description _____

Property Substantial Completion Form

Address: _____

Construction Start Date: _____ Construction and Restoration Completion Date: _____

Subcontractor Has Excavated and Restored the Following Areas:

☐ _____ – Depth _____ ft. ☐ _____ – Depth _____ ft.

☐ _____ – Depth _____ ft. ☐ _____ – Depth _____ ft.

Description of Other Yard Remediated _____

1. Did any damage occur to trees/plants that were not removed from yards? ☐ Yes ☐ No

Location _____ Description/Damage _____

Agreed To Resolution _____

2. Any items resident wanted removed from yards and disposed still present? ☐ Yes ☐ No

Location _____ Description _____

Agreed To Resolution _____

3. Were the items moved prior to construction returned to the proper location? ☐ Yes ☐ No

Location _____ Description _____

Agreed To Resolution _____

4. Were unknown buried items uncovered during the excavation? ☐ Yes ☐ No

Location _____ Description _____

What Was Done: _____

5. Have grasses, trees, shrubs, and perennials been replaced as approved? ☐ Yes ☐ No

List Any Missing Plants:

Location _____ Description _____

Location _____ Description _____

Location _____ Description _____

Agreed To Resolution _____

6. Does the resident report damage to the property from construction? ☐ Yes ☐ No

List all damage, including any already repaired:

Location _____ Description _____

Was the damage shown on the Preconstruction Photographs or Video? ☐ Yes ☐ No

Relevant Documentation: _____

Agreed To Resolution _____

7. Are there other unresolved issues? ☐ Yes ☐ No

List Any Unresolved Issues

Location _____ Description _____

Agreed To Resolution _____

8. Date for the completion of the 4-week landscape watering: _____

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9. Were there changes from the agreed preconstruction plan for the property? ☐ Yes ☐ No
- 9a. If yes, were the changes at the direction of the property owner? ☐ Yes ☐ No
- 9b. Provide a description of the changes (e.g., final grade modified):

Location _____ Description _____

The USEPA and their Representatives make no warranties or representations of the work for any property owner initiated design changes. Property owner also assumes all liability associated with property owner initiated field design changes of the work.

10. Date for resolution of all outstanding issues: _____

Agreement with the Property Owner That Construction Is Substantially Complete:

Construction and restoration activities associated with the Old American Zinc Superfund Site, Surrounding Properties, Remedial Action have been completed as agreed during the preconstruction meetings and as described above. The property owner hereby assumes responsibility for maintenance watering and care for the landscaping, including trees, shrubs, perennials, and sod.

Signatures:

_____	_____	_____
Date	Property Owner	Print Name

_____	_____	_____
Date	Contractor	Print Name

_____	_____	_____
Date	Owner's Representative	Print Name

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

SECTION 01 31 19
PROJECT MEETINGS

PART 1 GENERAL

1.01 GENERAL

- A. Contractor will schedule physical arrangements for meetings throughout progress of the Work, prepare meeting agenda with regular participant input and distribute with written notice of each meeting, preside at meetings, record minutes to include significant proceedings and decisions, and reproduce and distribute copies of minutes within 5 days after each meeting to participants and parties affected by meeting decisions. The meetings include, but are not limited to, the following:
1. Pre-construction conference.
 2. Scheduling meetings.
 3. Residential pre-construction meetings.
 4. Residential property preparatory phase meeting.
 5. Residential post-construction meetings.
 6. Daily tailgate meetings.
 7. Weekly progress meetings.
 8. Final post-construction meeting.
 9. Other meetings that may be determined necessary during the work.

1.02 PRECONSTRUCTION CONFERENCE

- A. Contractor will attend a one-time mandatory preconstruction conference, which will be held in St. Clair County, Illinois, prior to mobilization. The exact date and time will be determined after Contract Award. A health and safety charter will be performed with the Owner's Representative, Contractor, and Subcontractor staff. Contractor will be prepared to discuss the following subjects, as a minimum:
1. Required schedules.
 2. Status of Bonds and insurance.
 3. Sequencing of critical path work items.
 4. Progress payment procedures.
 5. Project changes and clarification procedures.
 6. Use of Site, access, office and storage areas, security and temporary facilities.
 7. Major product delivery and priorities.
 8. Contractor's safety plan and representative.

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9. Status of permits, license or required approvals.
10. Status of submittals.
11. Maintaining required records.
12. Activity Hazard Analyses.
13. Contractor Key Personnel Information and Points of Contact for 24 hours per day, 7 days per week.
14. Contractor Quality Control Plan.

B. Attendees will include:

1. EPA's representatives.
2. Contractor's office representative.
3. Contractor's resident onsite superintendent.
4. Contractor's onsite quality control representative.
5. Contractor's onsite health and safety representative.
6. Contractors' representatives whom Owner's Representative may desire or request to attend.
7. Owner's Representative(s).
8. Contractor's project manager.
9. Others as appropriate.

1.03 PRELIMINARY SCHEDULES REVIEW MEETING

- A. As set forth in General Conditions and Section 01 32 00, Construction Progress Documentation. A preliminary schedule review meeting will be conducted at the time of the Preconstruction Conference.

1.04 RESIDENTIAL PRECONSTRUCTION MEETINGS

- A. An initial Residential Preconstruction meeting will be conducted with the Property Owners several weeks before mobilization at the property to discuss schedule, access, remediation, removals, restoration, and security. During the preconstruction meeting, a copy of the construction drawings will be provided. The Owner's Representative will coordinate and lead the meetings with the Property Owners, Contractor, Subcontractor, and if necessary, the Tenants. Meetings may be scheduled outside of normal working hours and on weekends to accommodate the Property Owners' schedules. All parties will be required at all meetings until details are concluded. Details will include video/photo documentation of preconstruction conditions, identification of Property Owner-installed or Resident-installed facilities that could be impacted by remedial activities, and mark-up of construction drawings for current property features as indicated in Section 01 31 13, Project Coordination.

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- B. A second Preconstruction Meeting will be performed within approximately 1 week of mobilization to the property. The Owner's Representative, Contractor, and Subcontractor(s), as necessary, will meet with the Property Owner and Tenant, if necessary, at the property to confirm the drawing made during the initial Preconstruction Meeting. The property inventory list will also be confirmed and the current Property Owner will be given a copy of the photo documentation taken during the Initial Preconstruction Meeting. At the conclusion of the second Residential Preconstruction Meeting, the Property Owner, the Owner's Representative, and Contractor, will all sign the Property Owner Agreement authorizing the Work to be performed at that property.

1.05 RESIDENTIAL PROPERTY PREPARATORY PHASE MEETING

- A. Residential Property Preparatory Phase meetings will be held to review the property-specific plan including, but not limited to, yard areas where work is to be performed, excavation depths, utility locations, access points, landscape features to remain or be removed, owner requests, and other property features. The meeting will include a review of the property drawing, utility drawings, preconstruction meeting documentation and the physical property.
- B. Each Contractor crew will participate in an orientation prior to beginning intrusive work at each property.

1.06 DAILY TAILGATE MEETINGS

- A. Daily tailgate meetings will be conducted with the Owner's Representative every workday morning at 7 a.m. Central Time Zone (CT) unless alternate time is approved by the Owner's Representative. Generally, attendees for this meeting will include all Contractor and subcontractor personnel who will be onsite working that day. Documentation of the meeting will be provided to Owner's Representative by 10 a.m. CT that same day.
- B. Daily tailgate meetings will discuss the following subjects, as a minimum:
 - 1. The work planned for the day.
 - 2. Changes in work assignment.
 - 3. Health and safety issues.
 - 4. Quality issues.
 - 5. Review problems encountered the previous day.
 - 6. Review and sign the AHAs prior to beginning any work onsite.

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1.07 WEEKLY PROGRESS MEETINGS

- A. Contractor will attend regular progress meetings at the site, conducted weekly to review construction progress (previous week and upcoming week activities), progress schedule, sample collection and submissions schedule, schedule of values, contract modifications, and other matters that require discussion and resolution. Minimum required submittals for this meeting will be the weekly progress schedule update and weekly Schedule of Values update which are detailed in specification section 01 11 00, Summary of Work.

1.08 RESIDENTIAL POST-CONSTRUCTION MEETING

- A. Residential Post-Construction meetings will be conducted with Property Owners and if necessary, the Tenants following completion of restoration to review acceptability of completed Work and to develop punch list items as required. During the meeting, a copy of the edited survey notes and construction drawings will be reviewed showing information gathered during the Residential Preconstruction Meetings. The Owner's Representative will coordinate and lead the meetings with the Property Owner, Contractor, and Subcontractor(s), as necessary, in attendance at the property address. Meetings may be scheduled outside of normal Working hours and on weekends to accommodate the Property Owner and Tenant's schedule.
- B. The Contractor will correct the items on each punch list within 7 work days of receipt of the punch list. After the completion of the punch list items, the Owner and/or the Owner's Representative will meet with the Property Owner to perform a final inspection. The restored Work will be documented by the Owner's Representative using photographs and video. Upon acceptance of the Work, all parties will provide their signature to the Property Owner Agreement signing off that the work is complete.

1.09 PROJECT POST-CONSTRUCTION MEETING

- A. Contractor will attend a mandatory project post-construction meeting for the project, which will be scheduled after completion of field activities but prior to Contractor demobilization. The purpose of this final inspection/meeting is to close out any punch list items, discuss schedule for demobilization, and discuss delivery of all required deliverables.

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1.10 OTHER MEETINGS

- A. In accordance with Contract Documents and as may be required by Owner and Owner's Representative.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.01 SUBMITTALS

A. Informational Submittals:

1. Preliminary Progress Schedule: A Preliminary Project Schedule will be submitted with the Contractor's proposal.
2. Detailed Progress Schedule:
 - a. Submit initial Detailed Progress Schedule within 5 calendar days after Contract award.
 - b. Submit an Updated Progress Schedule at each weekly update, in accordance with Section 01 11 00, Summary of Work.
3. Submit with Each Progress Schedule Submission:
 - a. Contractor's certification that Progress Schedule submission is actual schedule being used for execution of the Work.
 - a. Disk file compatible with Microsoft Office Project 2013, unless otherwise approved by Owner's Representative and/or Engineer.
 - b. Hardcopy file.
 - c. Progress Schedule: 3 legible copies.
 - d. Narrative Progress Report: Same number of copies as specified for Progress Schedule.
4. Prior to final payment, submit a final Updated Progress Schedule.

1.02 SCHEDULE COORDINATION

- A.** The construction and restoration schedules will be reviewed during the weekly progress meetings.

1.03 PRELIMINARY PROGRESS SCHEDULE

- A.** The schedule will show major Work activities, beginning with Notice of Award. The major Work activities will include project coordination, mobilization, remediation at each property, restoration at each property, and other activities through Final Completion.
- B.** Show activities including, but not limited to the following:
1. Notice of Award.
 2. Permits.
 3. Preconstruction Conference.

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4. Project Mobilization Activities.
 5. Residential Preconstruction Meetings.
 6. Specified Work Sequences and Construction Constraints.
 7. Plant and sod watering activities.
 8. Contract Milestone and Completion Dates.
 9. Residential Post-construction Meetings.
 10. Project Close-out Summary.
 11. Demobilization Summary.
- C. The Preliminary Progress Schedule will show Work approach, sequences and constraints. This schedule data will be used by the Contractor in preparation of the Detailed Progress Schedule.
- D. Format: In accordance with Article Progress Schedule—Critical Path Network.

1.04 DETAILED PROGRESS SCHEDULE

- A. In addition to requirements of General Conditions, submit Detailed Progress Schedule with each corresponding definable feature of work (DFOW) beginning with Notice to Proceed and continuing through Final Completion. Submit prior to the Preconstruction Conference.
- B. Show the duration and sequences of activities required for complete performance of the Work reflecting means and methods chosen by Contractor.
- C. When accepted by Owner's Representative, Detailed Progress Schedule will replace Preliminary Progress Schedule and become the accepted Baseline Schedule. Subsequent revisions will be considered as Updated Progress Schedules, and shall provide progress/actual dates to baseline start and baseline finish dates.
- D. Format: In accordance with Article Progress Schedule—Critical Path Network.

1.05 PROGRESS SCHEDULE—CRITICAL PATH NETWORK

- A. General: Comprehensive computer-generated schedule using Microsoft Project 2013 or similar.
- B. Contents:
1. Schedule will begin with the date of Notice of Award and conclude with the date of Final Completion.
 2. Identify Work calendar basis using days as a unit of measure.

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3. Show complete interdependence and sequence of construction and Project-related activities reasonably required to complete the Work.
4. Identify the Work of separate stages and other logically grouped activities, and clearly identify critical path of activities.
5. Reflect sequences of the Work, restraints, delivery windows, review times, Contract Times and Project Milestones set forth in the Agreement and this section.
6. Include as applicable, at a minimum:
 - a. Obtaining permits, submittals for early product procurement, and long lead time items.
 - b. Mobilization and other preliminary activities.
 - c. Residential Preconstruction, Residential Post-construction, and Project Post-construction meetings.
 - d. Specified Work sequences, constraints, and Milestones, including Substantial Completion date(s) Contract Work.
 - e. Remediation activities.
 - f. Landscape Work and plantings.
 - g. Watering activities
 - h. Maintenance.
 - i. Project closeout and cleanup.
 - j. Demobilization.

C. Schedule Report:

1. On 8-1/2-inch by 11-inch white paper, unless otherwise approved.
2. List information for each activity in tabular format, including at a minimum:
 - a. Activity Identification Number.
 - b. Activity Description.
 - c. Original Duration.
 - d. Remaining Duration.
 - e. Early Start Date (Actual start on Updated Progress Schedules).
 - f. Early Finish Date (Actual finish on Updated Progress Schedules).
 - g. Late Start Date.
 - h. Late Finish Date.
 - i. Total Float.
3. Sort reports, in ascending order, as listed below:
 - a. Activity number sequence with predecessor and successor activity.

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1.06 **PROGRESS OF THE WORK**

A. Updated Progress Schedule shall reflect:

1. Progress of Work to within 2 working days prior to submission.
2. Approved changes in Work scope and activities modified since submission.
3. Delays in Submittals or resubmittals, deliveries, or Work.
4. Adjusted or modified sequences of Work.
5. Other identifiable changes.
6. Revised projections of progress and completion.
7. Report of changed logic.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SURROUNDING PROPERTIES REMEDIAL DESIGN
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SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 DEFINITIONS

- A. Action Submittal: Written and graphic information submitted by Contractor that requires Owner's Representative and/or Engineer's approval.
- B. Informational Submittal: Information submitted by Contractor that requires Owner's Representative and/or Engineer's review and determination that submitted information is in accordance with the Conditions of the Contract.

1.02 PROCEDURES

- A. Direct submittals to the Owner's Representative at the following address, which will be determined and provided during the Preconstruction Conference, unless specified otherwise.
- B. Electronic Submittals: Submittals will, unless otherwise specified, be made in electronic format.
 - 1. Each submittal will be an electronic file in Adobe Acrobat Portable Document Format (PDF). Use the latest version available at time of execution of the Agreement.
 - 2. Electronic files that contain more than 10 pages in PDF format will contain internal bookmarking from an index page to major sections of the document.
 - 3. PDF files will be set to open "Bookmarks and Page" view.
 - 4. Add general information to each PDF file, including title, subject, author, and keywords.
 - 5. PDF files will be set up to print legibly at 8.5-inch by 11-inch or 11-inch by 17-inch. No other paper sizes will be accepted.
 - 6. Submit new electronic files for each resubmittal.
 - 7. Include a copy of the Transmittal of Submittal form, with each electronic file.
 - 8. Provide Owner's Representative and Engineer with authorization to reproduce and distribute each file as many times as necessary for Project documentation.

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C. Transmittal of Submittal:

1. Contractor will:
 - a. Review each submittal and check for compliance with Contract Documents.
 - b. Identify each submittal with the following information before submitting to Owner's Representative:
 - 1) Project name, submittal number, Specification number, Contractor's reviewer name, date of Contractor's approval, and statement certifying submittal has been reviewed, checked, and approved for compliance with Contract Documents.
 - 2) Owner's Representative will not review submittals that do not bear Contractor's signature certifying the submittal has been checked and approved for compliance with Contract Documents, and will return them without action.
2. Complete, sign, and transmit with each submittal package, one Transmittal of Engineer's Submittal form attached at end of this section.
3. Identify each submittal with the following:
 - a. Numbering and Tracking System:
 - 1) Sequentially number each submittal.
 - 2) Resubmission of submittal will have original number with sequential alphabetic suffix.
 - b. Specification section and paragraph to which submittal applies.
 - c. Project title and Owner's Representative's project number.
 - d. Date of transmittal.
 - e. Names of Owner's Representative, Contractor or Supplier, and manufacturer as appropriate.
4. Identify and describe each deviation or variation from Contract Documents.
5. All action and information submittals will be submitted electronically on a secure website provided by Owner's Representative or Engineer.

D. Processing Time:

1. Time for review will commence on Owner's Representative's and Engineer's receipt of submittal.
2. Owner's Representative and/or Engineer will act upon Contractor's submittal and transmit response to Contractor not later than 10 work days after receipt, unless otherwise specified.
3. Resubmittals will be subject to same review time.

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4. No adjustment of Contract Times or Price will be allowed as a result of delays in progress of Work caused by rejection and subsequent resubmittals.
- E. Resubmittals: Clearly identify each correction or change made.
- F. Incomplete Submittals: Owner's Representative and/or Engineer will return entire submittal for Contractor's revision if preliminary review deems it incomplete.
- G. Submittals not required by Contract Documents:
 1. Will not be reviewed and will be returned stamped "Not Subject to Review."
 2. Owner's Representative and/or Engineer will keep one copy and return submittal to Contractor.

1.03 ACTION SUBMITTALS

- A. Prepare and submit Action Submittals required by individual specification sections.
- B. Shop Drawings:
 1. Copies: 1 hard copy unless requested otherwise by the Owner's Representative and/or Engineer, and one reproducible electronic copy, except copyrighted documents.
 2. Identify and Indicate:
 - a. Critical field dimensions and relationships to other critical features of Work. Note dimensions established by field measurement.
 - b. Project-specific information drawn accurately to scale.
 3. Product Data: Provide as specified in individual specifications.
- C. Samples:
 1. Copies: One, unless otherwise specified in individual specifications.
 2. Preparation: Mount, display, or package Samples in manner specified to facilitate review of quality. Attach label on unexposed side that includes the following:
 - a. Manufacturer name.
 - b. Model number.
 - c. Material.
 - d. Sample source.

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- D. Action Submittal Dispositions: Owner's Representative and/or Engineer will review submittals and respond as appropriate:
1. Approved:
 - a. Contractor may incorporate product(s) or implement Work covered by submittal.
 - b. Distribution: Electronic.
 2. Approved as Noted:
 - a. Contractor may incorporate product(s) or implement Work covered by submittal, in accordance with Owner's Representative's and/or Engineer's notations.
 - b. Distribution: Electronic.
 3. Partial Approval, Resubmit as Noted:
 - a. Make corrections or obtain missing portions, and resubmit.
 - b. Except for portions indicated, Contractor may begin to incorporate product(s) or implement Work covered by submittal, in accordance with Owner's Representative's notations.
 - c. Distribution: Electronic.
 4. Revise and Resubmit:
 - a. Contractor may not incorporate product(s) or implement Work covered by submittal.
 - b. Distribution: Electronic.

1.04 INFORMATIONAL SUBMITTALS

- A. General:
1. Copies: Submit to secure website provided by Owner's Representative or Engineer, unless otherwise indicated in individual specification section.
 2. Refer to individual specification sections for specific submittal requirements.
 3. Owner's Representative and/or Engineer will review each submittal. If submittal meets conditions of the Contract, Owner's Representative will forward copy to appropriate parties. If Owner's Representative and/or Engineer determines submittal does not meet conditions of the Contract and is therefore considered unacceptable, Owner's Representative will retain one copy and return remaining copy with review comments to Contractor, and require that submittal be corrected and resubmitted.
- B. Application for Payment: In accordance with Section 01 29 00, Payment Procedures.

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C. Certificates:

1. General:
 - a. Provide notarized statement that includes signature of entity responsible for preparing certification.
 - b. Signed by officer or other individual authorized to sign documents on behalf of that entity.
2. Installer: Prepare written statements on manufacturer's letterhead certifying installer complies with requirements as specified in individual specification section.
3. Material Test: Prepared by qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
4. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in individual specification sections.

D. Closeout Submittals: In accordance with Section 01 77 00, Closeout Procedures by the Contractor.

E. Contractor-design Data (related to temporary construction):

1. List of assumptions.
2. List of performance and design criteria.
3. Calculations.
4. List of applicable codes and regulations.
5. Name and version of software.
6. Information requested in individual specification section.

F. Manufacturer's Instructions: Written or published information that documents manufacturer's recommendations, guidelines, and procedures in accordance with individual specification section.

G. Operation and Maintenance Data: As required in Section 32 92 00, Turf and Grasses.

H. Payment:

1. Application for Payment: In accordance with Section 01 29 00, Payment Procedures.
2. Schedule of Values: In accordance with Section 01 29 00, Payment Procedures.

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- I. Quality Control Documentation: As required in Section 01 45 16.13, Contractor Quality Control.
- J. Schedules:
 - 1. Schedule of Submittals: Prepare separately or in combination with Progress Schedule as specified in Section 01 32 00, Construction Progress Documentation.
 - a. Show for each, at a minimum, the following:
 - 1) Specification section number.
 - 2) Identification by numbering and tracking system as specified under Paragraph Transmittal of Submittal.
 - 3) Estimated date of submission to Owner's Representative and Engineer, including reviewing and processing time.
 - 2. Schedule of Values: In accordance with Section 01 29 00, Payment Procedures.
 - 3. Progress Schedules: In accordance with Section 01 32 00, Construction Progress Documentation.
- K. Special Guarantee: Supplier's written guarantee as required in individual specification sections.
- L. Statement of Qualification: Evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, engineer, materials testing laboratory, specialty Subcontractor, trade, Specialist, consultant, installer, and other professionals.
- M. Submittals Required by Laws, Regulations, and Governing Agencies:
 - 1. Promptly submit promptly notifications, reports, certifications, payrolls, and otherwise as may be required, directly to the applicable federal, state, or local governing agency or their representative.
 - 2. Transmit to Owner's Representative and/or Engineer for their records one copy of correspondence and transmittals (to include enclosures and attachments) between Contractor and governing agency.
- N. Test, Evaluation, and Inspection Reports:
 - 1. General: Will contain signature of person responsible for test or report.
 - 2. Field:
 - a. As a minimum, include the following:
 - 1) Project title and number.
 - 2) Date and time.
 - 3) Record of temperature and weather conditions.

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- 4) Identification of product and specification section.
- 5) Type and location of test, Sample, or inspection, including referenced standard or code.
- 6) Date issued, testing laboratory name, address, and telephone number, and name and signature of laboratory inspector.
- 7) If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
- 8) Provide interpretation of test results, when requested by Owner's Representative or Engineer.
- 9) Other items as identified in individual specification sections.

O. Training Data: In accordance with Section 01 11 00, Summary of Work.

1.05 SUPPLEMENTS

A. The supplements listed below, following "End of Section", are part of this specification.

1. Forms: Transmittal of Contractor's Submittal.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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TRANSMITTAL OF CONTRACTOR'S SUBMITTAL (ATTACH TO EACH SUBMITTAL)			
DATE: _____			
TO: _____ _____ _____ _____ _____ FROM: _____ <div style="text-align: center;">Contractor</div> _____ _____ _____	Submittal No.: _____ <input type="checkbox"/> New Submittal <input type="checkbox"/> Resubmittal Project: _____ Project No.: _____ Specification Section No.: _____ (Cover only one section with each transmittal) Schedule Date of Submittal: _____ _____ _____		
SUBMITTAL TYPE:	<input type="checkbox"/> Shop Drawing	<input type="checkbox"/> Sample	<input type="checkbox"/> Informational
	<input type="checkbox"/> Deferred		

The following items are hereby submitted:

Number of Copies	Description of Item Submitted (Type, Size, Model Number, Etc.)	Spec. and Para. No.	Drawing or Brochure Number	Contains Variation to Contract	
				No	Yes

Contractor hereby certifies that (i) Contractor has complied with the requirements of Contract Documents in preparation, review, and submission of designated Submittal and (ii) the Submittal is complete and in accordance with the Contract Documents and requirements of laws and regulations and governing agencies.

By: _____
Contractor (Authorized Signature)

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SECTION 01 45 16.13
CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. ASTM International (ASTM):
 - a. D3740, Evaluation of Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
 - b. E329, Use in the Evaluation of Testing and Inspection Agencies as Used in Construction.

1.02 DEFINITIONS

- A. Contractor Quality Control (CQC): The means by which Contractor ensures that the construction and restoration, respectively, complies with the requirements of the Contract.
- B. Definable Feature of Work (DFOW): A task that is separate and distinct from other tasks and has separate control requirements

1.03 SUBMITTALS

- A. Informational Submittals:
 1. CQC Report Format.
 2. CQC Plan: Submit, not later than 14 days after receipt of Notice to Proceed.
 3. CQC Report: Submit a daily signed electronic document by 9:00 A.M. the following work day.

1.04 OWNER'S REPRESENTATIVE'S QUALITY ASSURANCE

- A. All Work is subject to Owner's Representative's quality assurance inspection and testing at all locations and at all reasonable times before acceptance to ensure strict compliance with the terms of the Contract Documents.

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- B. Owner's Representative's quality assurance inspections and tests are for the sole benefit of Owner's Representative and do not:
 - 1. Relieve Contractor of responsibility for providing adequate quality control measures;
 - 2. Relieve Contractor of responsibility for damage to or loss of the material before acceptance;
 - 3. Constitute or imply acceptance; or
 - 4. Affect the continuing rights of Owner's Representative after acceptance of the completed Work.
- C. The presence or absence of a quality assurance inspector does not relieve Contractor from any Contract requirement.
- D. Promptly furnish all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by Owner's Representative.
- E. Owner's Representative may charge Contractor for any additional cost of inspection or test when Work is not ready at the time specified by Contractor for inspection or test, or when prior rejection makes re-inspection or retest necessary. Quality assurance inspections and tests will be performed in a manner that will not unnecessarily delay the Work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. Maintain an adequate inspection system and perform such inspections as will ensure that the Work conforms to the Contract Documents.
- B. Maintain complete inspection records and make them available at all times to Owner and Owner's Representative.
- C. The quality control system will consist of plans, procedures, and organization necessary to produce an end product that complies with the Contract Documents. The system will cover all excavation and restoration operations, both onsite and offsite, including Work by subcontractors, fabricators, suppliers and purchasing agents, and will be keyed to the proposed construction sequence.

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3.02 COORDINATION MEETING

- A. After the Preconstruction Conference, but before start of construction, and prior to acceptance of the CQC Plan, schedule a meeting with Owner's Representative to discuss the quality control system.
- B. Develop a mutual understanding of the system details, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite Work, and the interrelationship of Owner's Representative's management and control with the Owner's Quality Assurance.
- C. There may be occasions when subsequent conferences may be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures that may require corrective action by Contractor.

3.03 QUALITY CONTROL ORGANIZATION

- A. CQC System Manager:
 - 1. Designate an individual within Contractor's organization who will be responsible for overall management of CQC and have the authority to act in CQC matters for the Contractor.
 - 1. CQC System Manager may perform other duties on the Project except as PM, CM, or other position where a conflict may exist with the CQC System Manager Stop Work authority.
 - 2. CQC System Manager will be an experienced construction person, with a minimum of 3 years construction experience on similar type Work.
 - 3. CQC System Manager will report to the Contractor's project manager or someone higher in the organization. Project manager in this context will mean the individual with responsibility for the overall quality and production management of the Project.
 - 4. CQC System Manager will be onsite during construction; periods of absence may not exceed 2 weeks at any one time.
 - 5. Identify an alternate for CQC System Manager to serve with full authority during the System Manager's absence. The requirements for the alternate will be the same as for designated CQC System Manager.
- B. CQC Staff:
 - 1. Designate a CQC staff, available at the Site at all times during progress, with complete authority to take any action necessary to ensure compliance with the Contract. CQC staff members will be subject to acceptance by Owner's Representative.

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2. CQC staff will take direction from CQC System Manager in matters pertaining to QC.
 3. CQC staff must be of sufficient size to ensure adequate QC coverage of Work phases, work shifts, and work crews involved in the construction. These personnel may perform other duties, but must be fully qualified by experience and technical training to perform their assigned QC responsibilities and must be allowed sufficient time to carry out these responsibilities.
 4. The actual strength of the CQC staff may vary during any specific Work period to cover the needs of the Project. Add additional staff when necessary for a proper CQC organization.
- C. Organizational Changes: Obtain Owner's Representative's acceptance before replacing any member of the CQC staff. Requests for changes will include name, qualifications, duties, and responsibilities of the proposed replacement.

3.04 QUALITY CONTROL PHASING

- A. CQC will include at least three phases of control to be conducted by CQC System Manager for all definable features of Work (DFOWs), as follows:
1. Preparatory Phase:
 - a. Notify Owner's Representative at least 48 hours in advance of beginning any of the required action of the preparatory phase.
 - b. This phase will include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The CQC System Manager will instruct applicable CQC staff as to the acceptable level of workmanship required in order to meet Contract requirements.
 - c. Document the results of the preparatory phase meeting by separate minutes prepared by the CQC System Manager and attached to the QC report.
 - d. Perform prior to beginning Work on each definable feature of Work:
 - 1) Review applicable Contract Specifications.
 - 2) Review applicable Contract Drawings.
 - 3) Verify that all materials and/or equipment have been tested, submitted, and approved.
 - 4) Verify that provisions have been made to provide required control inspection and testing.

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- 5) Examine the Work area to verify that all required preliminary Work has been completed and is in compliance with the Contract.
 - 6) Perform a physical examination of required materials, equipment, and sample Work to verify that they are on hand, conform to approved Shop Drawing or submitted data, and are properly stored.
 - 7) Review the appropriate activity hazard analysis to verify safety requirements are met.
 - 8) Review procedures for constructing the Work, including repetitive deficiencies.
 - 9) Document construction tolerances and workmanship standards for that phase of the Work.
 - 10) Check to verify that the plan for the Work to be performed, if so required, has been accepted by Owner's Representative.
2. Initial Phase:
- a. Accomplish at the beginning of a definable feature of Work:
 - 1) Notify Owner's Representative at least 48 hours in advance of beginning the initial phase.
 - 2) Perform prior to beginning Work on each definable feature of Work:
 - a) Review minutes of the preparatory meeting.
 - b) Check preliminary Work to verify compliance with Contract requirements.
 - c) Verify required control inspection and testing.
 - d) Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Comparison with sample panels is appropriate.
 - e) Resolve all differences.
 - f) Check safety to include compliance with and upgrading of the health and safety plan and activity hazard analysis. Review the activity hazard analysis with each worker.
 - 3) Separate minutes of this phase will be prepared by the CQC System Manager and attached to the QC report. Exact location of initial phase will be indicated for future reference and comparison with follow-up phases.
 - 4) The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

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3. Follow-up Phase:
 - a. Perform daily checks to verify continuing compliance with Contract requirements, including control testing, until completion of the particular feature of Work.
 - b. Daily checks will be made a matter of record in the CQC documentation and will document specific results of inspections for all features of Work for the day or shift.
 - c. Conduct final follow-up checks and correct all deficiencies prior to the start of additional features of Work that will be affected by the deficient Work. Constructing upon or concealing nonconforming Work will not be allowed.
4. Additional Preparatory and Initial Phases: Additional preparatory and initial phases may be conducted on the same definable features of Work as determined by Owner if the quality of ongoing Work is unacceptable; or if there are changes in the applicable QC staff or in the onsite production supervision or work crew; or if work on a definable feature is resumed after a substantial period of inactivity, or if other problems develop.

3.05 CONTRACTOR QUALITY CONTROL PLAN

A. General:

1. Plan will identify personnel, procedures, control, instructions, test, records, and forms to be used.
2. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of Work to be started.
3. Work outside of the features of Work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of Work to be started.

B. Content:

1. Plan will cover the intended CQC organization for the entire Contract and will include the following, as a minimum:
 - a. Organization: Description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff will implement the three-phase control system (see Paragraph 3.04 QC Phasing) for all aspects of the Work specified.

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- b. CQC Staff: The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a QC function.
 - c. Letters of Authority: A copy of a letter to the CQC System Manager signed by an authorized official of the firm, describing the responsibilities and delegating sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop Work which is not in compliance with the Contract. The CQC System Manager will issue letters of direction to all other various quality control representatives outlining duties, authorities and responsibilities. Copies of these letters will also be furnished to Owner's Representative.
 - d. Submittals: Procedures for scheduling, reviewing, certifying, and managing submittals, including those of Subcontractors, offsite fabricators, suppliers and purchasing agents.
 - e. Testing: Control, verification and acceptance testing procedures for each specific test to include the test name, frequency, specification paragraph containing the test requirements, the personnel and laboratory responsible for each type of test, and an estimate of the number of tests required.
 - f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests, including documentation.
 - g. Procedures for tracking deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.
 - h. Reporting procedures, including proposed reporting formats; include a copy of the CQC report form.
- C. Acceptance of Plans: Acceptance of the Subcontractor's basic and addendum CQC plans is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. Owner's Representative reserves the right to require Subcontractor to make changes in the CQC plan and operations including removal of personnel, as necessary, to obtain the quality specified.
- D. Notification of Changes: After acceptance of the CQC plan, Contractor will notify Owner's Representative, in writing, a minimum of 7 calendar days prior to any proposed change. Proposed changes are subject to acceptance by Owner's Representative.

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3.06 CONTRACTOR QUALITY CONTROL REPORT

- A. As a minimum, prepare a CQC report for every 7 calendar days. Account for all days throughout the life of the Contract. Reports will be signed and dated by CQC System Manager. Include copies of test reports and copies of reports prepared by QC staff.
- B. Maintain current records of quality control operations, activities, and tests performed, including the Work of subcontractors and suppliers.
- C. Records will be on an acceptable form and will be a complete description of inspections, the results of inspections, daily activities, tests, and other items, including but not limited to the following:
 - 1. Subcontractor and their areas of responsibility.
 - 2. Operating equipment with hours worked, idle, or down for repair.
 - 3. Work performed today, giving location, description, and by whom. When a network schedule is used, identify each phase of Work performed each day by activity number.
 - 4. Test and/or control activities performed with results and references to specifications/plan requirements. The control phase should be identified (Preparatory, Initial, Follow-up). List deficiencies noted along with corrective action.
 - 5. Material received with statement as to its acceptability and storage. This includes material received by Subcontractor(s) (i.e. trees and plants).
 - 6. Identify submittals reviewed, with Subcontract reference, by whom, and action taken.
 - 7. Offsite surveillance activities, including actions taken.
 - 8. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
 - 9. List instructions given/received and conflicts in Drawings and/or Specifications.
 - 10. Contractor's verification statement.
 - 11. Indicate a description of trades working on the Project; the number of personnel working; weather conditions encountered; and any delays encountered.
 - 12. These records will cover both conforming and deficient features and will include a statement that equipment and materials incorporated in file work and workmanship comply with the Contract.

3.07 SUBMITTAL QUALITY CONTROL

- A. Submittals will be as specified in Section 01 33 00, Submittal Procedures. The CQC organization will be responsible for certifying that all submittals are in compliance with the Contract requirements.

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3.08 TESTING QUALITY CONTROL

A. Testing Procedure:

1. Perform tests specified or required to verify that control measures are adequate to provide a product which conforms to Contract requirements. Perform the following activities and record the following data:
 - a. Verify testing procedures comply with Contract requirements.
 - b. Verify facilities and testing equipment are available and comply with testing standards.
 - c. Check test instrument calibration data against certified standards.
 - d. Verify recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
 - e. Documentation:
 - 1) Record results of all tests taken, both passing and failing, on the CQC report for the date taken.
 - 2) Include specification paragraph reference, location where tests were taken, and the sequential control number identifying the test.
 - 3) Actual test reports may be submitted later, if approved by Owner's Representative, with a reference to the test number and date taken.
 - 4) Provide directly to Owner's Representative an information copy of tests performed by an offsite or commercial test facility. Test results will be signed by an engineer registered in the state where the tests are performed.
 - 5) Failure to submit timely test reports, as stated, may result in nonpayment for related Work performed and disapproval of the test facility for this Contract.

- B. Testing Laboratories: Laboratory facilities, including personnel and equipment, utilized for testing soils, concrete, asphalt and steel will meet criteria detailed in ASTM D3740 and ASTM E329, and be accredited by the American Association of Laboratory Accreditation (AALA), National Institute of Standards and Technology (NIST), National Voluntary Laboratory Accreditation Program (NVLAP), the American Association of State Highway and Transportation Officials (AASHTO), or other approved national accreditation authority. Personnel performing concrete testing will be certified by the American Concrete Institute (ACI).

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3.09 COMPLETION INSPECTION

- A. CQC System Manager will conduct an inspection of the Work at the completion of all Work or any milestone established by a completion time stated in the Contract.
- B. Punchlist:
 - 1. CQC System Manager will develop a punchlist of items which do not conform to the Contract requirements.
 - 2. Include punchlist in the CQC report, indicating the estimated date by which the deficiencies will be corrected.
 - 3. CQC System Manager or staff will make a second inspection to ascertain that all deficiencies have been corrected and so notify the Owner's Representative.
 - 4. These inspections and any deficiency corrections required will be accomplished within the time stated for completion of the entire Work or any particular increment thereof if the Project is divided into increments by separate completion dates.

END OF SECTION

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SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Association of Nurserymen (AAN): American Standards for Nursery Stock.
2. Federal Emergency Management Agency (FEMA).
3. National Fire Prevention Association (NFPA): 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.
4. Telecommunications Industry Association (TIA); Electronic Industries Alliance (EIA): 568B, Commercial Building Telecommunications Cabling Standard.
5. U.S. Department of Agriculture (USDA): Urban Hydrology for Small Watersheds.
6. OSHA 29 CFR 1910 and 1926.
7. U.S. Environmental Protection Agency:
 - a. Resource Conservation and Recovery Act (RCRA).
 - 1) Title 40 of the Code of Federal Regulations, Part 261 (40 CFR 261), Subpart C Characteristics of Hazardous Waste.
 - 2) 40 CFR 263, Standards Applicable to Transporters of Hazardous Waste.
 - 3) 40 CFR 268, Land Disposal Restrictions.
 - b. Toxic Substances Control Act (TSCA), 40 CFR 761.
 - c. Oil Pollution Prevention, 40 CFR, Part 112.
8. U.S. Department of Transportation:
 - a. 49 CFR 171, General Information, Regulations, and Definitions.
 - b. 49 CFR 172, Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements.
 - c. 49 CFR 173, Shippers - General Requirements for Shipments and Packaging.
 - d. 49 CFR 178, Specifications for Packaging.
9. U.S. Weather Bureau: Rainfall-Frequency Atlas of the U.S. for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years.
10. Illinois Environmental Protection Agency:
 - a. IAC Title 35, Part 808 Special Waste.

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1.02 SUBMITTALS

A. Informational Submittals:

1. Copies of permits and approvals for construction as required by Laws and Regulations and governing agencies.
2. Temporary Utility Submittals:
 - a. Electric power supply plans.
 - b. Water supply source.
3. Temporary Construction Submittals:
 - a. Staging area location plan. The Contractor will provide separation of clean borrow material stockpiles from potentially contaminated soils at the FA.
 - b. Construction details for decontamination pad.
 - c. Fencing and protective barrier locations and details.
4. Temporary Control Submittals (where relevant, include controls both at properties and at the staging area at the FA):
 - a. Stormwater Pollution Prevention Plan, as described in Subpart 1.05.B. of this section.
 - b. Noise control plan: Submit information to mitigate construction noise, including method of construction, operating procedures, equipment to be used, and acoustical treatments to minimize disturbance to the community and comply with applicable local noise regulations and ordinances.
 - c. Fugitive Dust control plan: Submit information for the management of stockpiles and transport of bulk materials to minimize fugitive dust emissions in accordance with the Air Monitoring Plan.
 - d. Air Monitoring Plan: The Contractor will revise the draft Air Monitoring Plan developed by the Engineer. The revised plan will include the following details regarding Contractor's real-time air monitoring for particulate matter on a continuous basis at residences and stockpiles at the FA:
 - 1) Data will be recorded to data logger once per minute and checked by personnel once every 30 minutes.
 - 2) Air monitoring equipment will be placed in locations to verify effectiveness of engineering controls in minimizing dust generation that may potentially leave the exclusion zone.
 - 3) Dust monitors will be placed upwind and downwind of earthwork activities at a property to determine the impact of the construction activities on air quality.

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- 4) Dust monitoring data will be evaluated against the USEPA National Ambient Air Quality Standards (NAAQS) for PM10 of 0.15 milligrams per cubic meter.
 - 5) During work hours, an alarm will be set at 0.5 milligrams per cubic meter to observe activities and determine the cause for elevated particulate concentrations and evaluate potential mitigation measures. Sustained exceedances of 0.5 milligrams per cubic meter during work hours will be mitigated with measures such as application of water, street cleaning, covering stockpiles except when loading or unloading, modifying work procedures or stopping work to maintain the 24-hour time-weighted average concentration below the criteria.
 - 6) Exceedances of the dust monitoring criteria of 0.5 milligrams per cubic meter (determined by the Engineer based on the maximum arsenic, cadmium, lead, and zinc concentrations detected during the RI and predesign sampling) will require dust abatement measures, typically application of water, or stop work and further evaluation.
 - 7) Contractor personnel working within or in close proximity to the excavation will wear personal sampling pumps and have samples collected for laboratory analysis to determine personal exposure to the COCs.
5. Air monitoring results, to be submitted by Contractor:
- a. PM10 results:
 - 1) Microsoft Excel 2013 compatible electronic file with results recorded in 1-minute intervals.
 - 2) File names denoting address being sampled, sample meter location (i.e., upwind or downwind), and sample date.
 - 3) Submitted daily.
 - b. Arsenic, cadmium, lead, and zinc analytical results from personal sampling pumps:
 - 1) Laboratory analytical report in Adobe Acrobat 9.0 or compatible version.
 - 2) Electronic data deliverable in Microsoft Excel 2013 compatible electronic file.
 - 3) Report sample collection interval, volume, and address where personal sample was collected.
 - 4) Employee names may be redacted.
 - 5) Submitted monthly.

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- c. Transportation and Disposal Plan will describe the sampling, transportation, and disposal of wastes, and construction debris. The Transportation and Disposal Plan will include the following:
 - 1) Sequences of construction affecting use of roadways, time required for each phase of the Work, and phasing of operations to provide necessary access for pedestrians and vehicles.
 - 2) The sequence of moving, handling and loading of trucks.
 - 3) Describe signage and protective measures for pedestrian traffic on sidewalks and vehicular traffic on streets.
 - 4) Information for intended haul routes to and from the staging area and approved disposal facility. Routes to and from the residential properties will generally be shortest route available.
 - 5) Sampling, handling and disposal requirements for stormwater that has contacted impacted soils (Illinois liquid Special Waste) and required removal from an excavation.
 - 6) Provisions for sampling and disposing of decontamination liquids and also disposal of used personal protective equipment or other remediation-derived wastes generated.
 - 7) Plans for transporting excavated soil to the FA for stockpiling and importing materials from approved borrow sources.
 - 8) Preparation of waste characterization profiles, proof of disposal facility approval under the CERCLA Offsite Rule, set forth in the National Contingency Plan, at 40 Code of Federal Regulations 300.440, and proof of disposal facility acceptance.
 - 9) Provisions for street cleaning and equipment decontamination.
 - 10) Manifesting and other shipping documentation requirements for offsite transportation of contaminated soils and/or liquids for approval prior to beginning work, and as the work progresses (submitted daily).
 - 11) Identification of all waste streams.
 - 12) Waste and container management, storage, labeling, and marking.
 - 13) Spill response and reporting (for potential spills related to transportation of materials).
- d. Records and reporting.

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1.03 PROTECTION OF WORK AND PROPERTY

A. General:

1. Perform Work within right-of-way and easements in a systematic manner that minimizes inconvenience to property owners and the public.
2. No residence or business will be cut off from vehicular traffic, unless special arrangements have been made and approved by the Owner's Representative.
3. Maintain in continuous service all existing oil and gas pipelines, underground power, telephone or communication cable, water mains, irrigation lines, sewers, poles and overhead power, and all other utilities encountered a long line of the Work, unless other arrangements satisfactory to the Owner's Representative and to owners of said utilities have been made.
4. Where completion of the Work requires temporary or permanent removal or relocation of existing utility, coordinate all activities with owner of said utility and perform all work to their satisfaction.
5. Protect, shore, brace, support, and maintain underground pipes, conduits, drains, and other underground utility construction uncovered or otherwise affected by construction operations.
6. Keep fire hydrants and water control valves free from obstruction and available for use at all times.
7. In areas where Contractor's operations are adjacent to or near a utility, such as gas, telephone, television, electric power, water, sewer, or irrigation system, and such operations may cause damage or inconvenience, suspend operations until arrangements necessary for protection have been made by Contractor.
8. Notify property owners and utility offices that may be affected by construction operations at least 2 days in advance. Before exposing a utility, obtain utility owner's permission. Should service of utility be interrupted due to Contractor's operation, notify proper authority immediately. Cooperate with said authority in restoring service as promptly as possible and bear costs incurred.
9. Do not impair operation of existing sewer system. Prevent construction material, pavement, concrete, earth, volatile and corrosive wastes, and other debris from entering sewers, pump stations, or other sewer structures.
10. The Contractor is responsible for repair or replacement of damage caused as a result of construction activities at no cost to Owner, Engineer, or Owner's Representative. This responsibility also includes secondary damage caused by the event.

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11. Unless approved by Owner's Representative or Engineer, the Contractor will maintain original Site drainage.

1.04 VEHICULAR TRAFFIC

- A. Traffic Control Plan: Adhere to traffic control plan in the Transportation and Disposal Plan reviewed and accepted by Owner's Representative. Changes to this plan will be made only by written approval of appropriate public authority and the Owner's Representative. Secure approvals for necessary changes so as not to delay progress of the Work.

1.05 TEMPORARY CONTROLS

- A. Contractor will provide safety and environmental controls during remediation-related construction activities to protect the public, workers, and environment and ensure that all work is performed in a manner that meets the intent of federal, state, and local environmental regulations.
- B. Stormwater Pollution Prevention Plan: Contractor will submit a Stormwater Pollution Prevention Plan for approval by the Owner's Representative. The Stormwater Pollution Prevention Plan will be consistent with substantive requirements of Illinois's General NPDES Permit No. ILR10 for Storm Water Discharges from Construction Site Activities (IEPA 2013), Illinois Administrative Code Title 35, Subtitle C, Chapter 1, Part 302, the National Pollutant Discharge Elimination System (NPDES) requirements (40 Code of Federal Regulations Parts 121 and 122 et seq.) and the guidance provided in the Illinois Urban Manual (www.aiswcd.org/IU). The plan will:
1. Describe the best management practices for earth disturbing activities and procedures to control soil erosion, sediment transport, and potential spills, including from stockpiles of general backfill, topsoil, and excavated soils, excavations, and at the construction site entrance and exit.
 2. Describe erosion and sediment control at staging, stockpiling, and storage areas as well as at the residential properties, including silt fence or other appropriate measures and inlet protection.
 3. Describe how water entering excavations and contained on top of liners will be discharged as clean stormwater and other stormwater management activities.
 4. Address preplanning for spill control and spill control measures, including potential spills of decontamination rinsate, contaminated soils, vehicle fuel, and hydraulic oil.
 5. Address fire control materials and equipment.
 6. Address drum, container, and tank handling and moving procedures.

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7. Address protection against stockpile runoff at residential properties and at the FA staging/stockpiling area.
 8. Describe inspection and maintenance procedures.
- C. Contractor will install, inspect, maintain and provide recordkeeping for temporary stormwater pollution prevention and soil erosion and sediment control measures under the authorization of an Illinois qualified person (i.e., Professional Engineer, Certified Professional in Erosion and Sediment Control, Certified Erosion Sediment and Storm Water Inspector, or other knowledgeable person) who possesses the skills to assess conditions at construction site that could impact stormwater quality and assess effectiveness of any sediment and erosion control measures implemented. The Contractor will ensure that temporary stormwater pollution prevention and soil erosion and sediment control measures prevent erosion during earthwork activities at residential properties. The work will include the furnishing of all labor, materials, tools, and equipment to perform the work and services necessary as herein specified.
1. Erosion control will be performed in accordance with the Stormwater Pollution Prevention Plan.
 2. Soil erosion stabilization and sedimentation control may consist of construction, inspection, maintenance and recordkeeping of temporary erosion control such as inlet protection, silt fences, erosion bales, etc.
 - a. Inlet protection will be installed at the nearest downgradient storm sewer inlet.
 - b. Silt fence will be installed at excavation areas where slope is present greater than 1V:5H.
 3. Temporary stormwater pollution prevention and soil erosion and sediment control measures at or near residential properties will be removed by the Contractor after final street cleaning is performed subsequent to the completion of restoration activities specified in Section 32 91 26, Site Restoration.
- D. Contractor will install, inspect, maintain, and remove temporary stormwater pollution prevention and erosion and sediment control measures to prevent erosion at the FA staging area and stockpiles.
1. Soil erosion stabilization and sedimentation control will consist of the following elements:
 - a. Construction, inspection, maintenance, and record keeping of temporary erosion and sediment control such as silt fences, erosion bales, etc. where runoff will occur onto unpaved surfaces.

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- b. Excavated soils will be staged and managed with appropriate protection in accordance with Illinois Administrative Code Title 35 724.652. The staging pile will be located on the FA, as shown on the Drawings, no greater than 10 feet high, sloped no greater than 4H:1V, and will be covered daily with plastic sheeting, or approved equivalent.
- c. Stockpiles will not be placed over existing monitoring wells located at the FA, nor will they prohibit access to existing monitoring wells.
- d. Temporary stockpile covering: Placement and maintenance of reinforced plastic covering over stockpiles during non-working hours or inclement weather to reduce fugitive dust emissions from staging piles and protect from precipitation and erosion.
- e. As necessary, place stone at the FA staging area between the stockpiles and the entrance to minimize tracking of soils from the staging area.

PART 2 PRODUCTS

2.01 OWNER'S REPRESENTATIVE'S FIELD OFFICES

- A. Furnish equipment specified for exclusive use of Owner's Representative and its representatives.
- B. Ownership of equipment furnished under this article will remain, unless otherwise specified, that of Contractor.
- C. Equipment furnished will be new or like new in appearance and function.
- D. Minimum Features:
 - 1. 110-volt lighting and wall plugs.
 - 2. Fluorescent ceiling lights.
 - 3. Electric heating and self-contained air conditioning unit, properly sized for Project locale and conditions. Provide ample electric power to operate installed systems.
 - 4. Railed stairways and landings at entrances.
 - 5. Sign on entrance door reading Owner Representative's name (TBD), letter height 4 inches minimum.
 - 6. Exterior Door(s):
 - a. Number: One.
 - b. Type: Solid core.
 - c. Lock(s): Cylindrical.
 - 7. Number of Windows: Two.
 - 8. Minimum Interior Height: 8 feet.

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- E. Floor Space: Minimum 225 square feet.
- F. Rooms: Two, with minimum private office floor space of 80 square feet, and remainder configured for open meeting or storage space.
- G. Trailer Type Mobile Structure: One.
- H. All-metal frame; all-metal exterior, sides, and roof; and insulated double walls, floor, and roof.
- I. Security guard screens on windows.
- J. Storage Room: One, 6 feet by 8 feet, with door with cylinder lock, keyed differently than exterior door locks. Provide two sets of keys.
- K. Shelving in Storage Room: 72 linear feet, 18 inches deep.
- L. Blinds or drapes on windows.
- M. Office Equipment—General:
 - 1. Desk: Two, steel, 30 inches by 60 inches with desk surface located 29 inches from floor.
 - 2. Desk Chair: Two, with the following characteristics:
 - a. Five castor base.
 - b. Adjustable height.
 - c. Swivels.
 - d. Locking Back.
 - e. Adjustable seat back for height and angle.
 - f. Adjustable arms.
 - 3. Folding Table: One, 36 inches by 72 inches.
 - 4. Steel Folding Chairs: Two.
 - 5. Four-Drawer Steel File with Lock: One, legal width.
 - 6. Bookcase: Two, 36 inches wide by 48 inches high.
 - 7. Wastepaper Basket: Two.
 - 8. First-Aid Kit: One.
 - 9. Tri-Class (ABC), Dry Chemical Fire Extinguisher, 10-Pound: One.
 - 10. Telephone: Two, with one intercom line and two incoming/outgoing lines, Touch-Tone, with conference speaker, and 12-foot coiled handset cord.
 - 11. Copier, capable of producing both black and white, and color images, multi-function with scanning, email, and fax capabilities, self-feeding, capable of providing 11-inch by 17-inch, 8-1/2-inch by 11-inch, and 8-1/2-inch by 14-inch copies and collating multiple copies to 10, and reduction and enlargement capabilities; include maintenance service agreement for duration of contract.

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2.02 TEMPORARY STOCKPILE COVERING (SOIL STAGING PILE AND BORROW STOCKPILES)

- A. Cover soil staging pile prior to seeding.
- B. Cover borrow stockpiles at the end of the day, and/or at Owner Representative's direction.
- C. Cover material will be reinforced plastic, 6 mil minimum, with an ultra-violet ray inhibitor or polyvinyl chloride (PVC) a minimum of 10 mils thick.
- D. Anchor with sandbags or approved equivalent spaced along the perimeter to prevent the liner from becoming displaced.
- E. When freezing conditions are expected, use PVC material.

2.03 SILT FENCE—MINIMUM REQUIREMENTS

- A. Fabric will be minimum 15 mils thick, with a tensile strength of 120 pounds, and with an equivalent opening size of 170 (U.S. Standard Sieve).
- B. Silt fence must have at least two permanent markings or affixed labels per assembled roll (100 feet) which positively identifies the fabricator.
- C. Silt fence fabric will be attached to machine pointed No. 2 common grade hardwood posts using at least five staples through wood lath a minimum of 3/8 inch thick and 2.0 feet long.
- D. Silt fence posts must have cross-sectional area of at least 2.25 square inches and must be a minimum of 36 inches in length.

2.04 STRAW MULCH/BALES

- A. Threshed straw of oats, wheat, barley, or rye, free from seed of diseased plant residue, noxious weeds, weed seeds, harmful chemical residues, or clean salt hay.

2.05 OTHER EROSION AND SEDIMENT CONTROL ITEMS

- A. Products suggested by the Contractor and approved by the Owner's Representative to prevent stormwater pollution and erosion and control sediment.

2.06 HIGH-VISIBILITY FENCE

- A. As specified in Section 31 10 00, Site Preparation.

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2.07 BARRICADES AND LIGHTS

- A. As required to perform Work.

2.08 SIGNS AND EQUIPMENT

- A. As specified in Section 3.03 C and/or recommended by Contractor and approved by the Owner's Representative.
- B. Delivered equipment will be inspected at the project site. Equipment that is not in good condition or which arrives with contents and/or contamination will not be loaded and will be turned away with the costs borne by the Contractor, at the sole discretion of Owner's Representative or Engineer.

PART 3 EXECUTION

3.01 MOBILIZATION

- A. This task will consist of mobilizing Contractor personnel, equipment, any Subcontractors, and materials to the project site. The Contractor will be responsible for coordinating and making arrangements for storage and staging areas for construction equipment and fill/borrow material, temporary storage of Property Owners' and Tenants' objects and materials.
- B. The Contractor will install erosion control measures according to best management practices and the Stormwater Pollution Prevention Plan, and also prepare a vehicle decontamination area and a soil storage area that are designed to contain runoff from these activities.
 - 1. Coordination and scheduling of mobilization activities will be discussed with Owner's Representative in detail during the preconstruction meeting.
- C. Mobilization will include, but not be limited to, these principal items:
 - 1. Obtaining required approvals and permits.
 - 2. Mobilizing Contractor's and Owner's Representative's field office and equipment required for operations onto Site.
 - 3. Secure facilities to store and protect Property Owners' and Tenants' moved objects and materials during construction.
 - 4. Installing temporary construction power, wiring, and lighting facilities.
 - 5. Providing onsite communication facilities if desired by Contractor.
 - 6. Providing onsite sanitary facilities and potable water facilities as specified and as required by Laws and Regulations, and governing agencies.

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7. Arranging for Contractor's storage yard.
8. Posting OSHA required notices and establishing safety programs and procedures.
9. Having Contractor's superintendent at the Site full time.

3.02 OWNER'S REPRESENTATIVE'S FIELD OFFICE

- A. Make available for Owner's Representative's use prior to start of the Work at Site and to remain on Site for minimum of 30 days after final acceptance of the Work.
- B. Locate where directed by Owner's Representative; level, block, tie down, skirt, provide stairways, and relocate when necessary and approved. Construct on proper foundations, and provide proper surface drainage and connections for utility services.
- C. Provide minimum 100 square feet of gravel or crushed rock base, minimum depth of 4 inches, at each entrance.
- D. Raise grade under field office, as necessary, to elevation adequate to avoid flooding.
- E. Provide sanitary facilities in compliance with state and local health authorities.
- F. Exterior Door Keys: Furnish two set(s) of keys.
- G. Telephone:
 1. Provide number of incoming lines equal to that specified for telephone type.
 2. Provide separate analog modem line.
 3. Provide appropriate jacks; locate as directed by Owner's Representative.
 4. Provide wiring necessary for complete telephone system.
- H. Telecommunications:
 1. Provide DSL or cable Internet connection with minimum of five live portable computer (PC) ports.
 2. Provide appropriate jacks, CAT-5 patch cords, wiring, and equipment required for a complete telecommunications system.
 3. Arrange and provide for telecommunication service for use during construction. Pay costs of installation, maintenance, and monthly service of internet connection.

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- I. Maintain in good repair and appearance, and provide weekly cleaning service and replenishment, as required, of paper towels, paper cups, hand soap, toilet paper, first-aid kit supplies, and bottled water.
- J. Replenish, as needed, copy paper and toner.

3.03 TEMPORARY UTILITIES

A. Power:

- 1. No electric power is available at Site. Make arrangements to obtain and pay for electrical power used until final payment and acceptance by Owner, unless otherwise recommended by Owner's Representative at Substantial Completion.
- 2. Contractor will provide portable generators for required power at the sites.
- 3. Contractor will arrange for electrical hook-ups at the field offices and staging areas, if desired. Cost of electric power will be borne by Contractor.

B. Lighting: Provide temporary lighting to meet applicable safety requirements to allow erection, application, or installation of materials and equipment, and observation or inspection of the Work.

C. Heating, Cooling, and Ventilating:

- 1. Provide as required to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for installation of materials, and to protect materials, equipment, and finishes from damage because of temperature or humidity.
- 2. Provide adequate forced air ventilation of enclosed areas to cure installed materials, to dispense humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.
- 3. Pay costs of installation, maintenance, operation, removal, and fuel consumed.
- 4. Provide portable unit heaters, complete with controls, oil- or gas-fired, and suitably vented to outside as required for protection of health and property.
- 5. If permanent natural gas piping is used for temporary heating units, do not modify or reroute gas piping without approval of utility company. Provide separate gas metering as required by utility.

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- D. Water: Contractor is not allowed to use water from the residence. Contractor must make arrangements for and bear costs of providing water required for construction purposes and for drinking by construction personnel during construction. Contractor will be responsible to obtain permits or approvals for water sources and monitor flowrates and quantities from sources.
- E. Sanitary and Personnel Facilities: Provide and maintain facilities for Owner's Representative's employees, Contractors, and subcontractors. Service, clean, and maintain facilities and enclosures a minimum of 2 times per week, with a separate facility provided for female personnel.
- F. Telephone Service:
 - 1. Contractor will arrange and provide onsite telephone service for Contractor use during construction, if needed. Contractor will pay costs of installation and monthly bills.
 - 2. Contractor will arrange and provide onsite telephone system for Owner's Representative use during construction. Pay for installation and basic monthly billing charges.
 - 3. Contractor will pay Owner's Representative's long distance charges from \$400 monthly allowance. At Project completion, difference between total actual long distance charges and cumulative amount of this allowance will be adjusted by Change Order.
- G. Fire Protection: Furnish and maintain on Site adequate firefighting equipment capable of extinguishing incipient fires. Comply with applicable parts of NFPA 241.

3.04 PROTECTION OF WORK AND PROPERTY

- A. Site Security:
 - 1. Contractor will provide temporary storage enclosures for tools, materials, supplies or equipment at the FA.
 - 2. The Owner, Engineer, and Owner's Representative are not responsible for theft, damages or losses incurred during the performance of this Work.
- B. Barricades and Lights:
 - 1. Provide as required by the Vehicle Code and in sufficient quantity to safeguard public and the Work.

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2. Provide as necessary to prevent unauthorized entry to construction areas and affected roads, streets, and alleyways, inside and outside of fenced area, and as required to ensure public safety and the safety of Contractor's employees, other employer's employees, and others who may be affected by the Work.
3. Provide to protect existing facilities and adjacent properties from potential damage.
4. Locate to enable access by Property Owners and Tenants.
5. Protect streets, roads, highways, and other public thoroughfares that are closed to traffic by effective barricades with acceptable warning signs.
6. Locate barricades at the nearest intersecting public thoroughfare on each side of blocked section in accordance with governing requirements.
7. Illuminate barricades and obstructions with warning lights from sunset to sunrise.

C. Signs and Equipment:

1. Conform to applicable federal, state or local requirements.
2. Traffic Cones: Provide to delineate traffic lanes to guide and separate traffic movements.
3. High-Level Warning Flag Units: Provide two in advance of traffic approaching the Work, each displaying three flags mounted at a height of 9 feet.
4. DETOUR Signs: Provide two right arrow or left arrow, placed as approved by Owner's Representative.
5. RIGHT or LEFT LANE CLOSED AHEAD Signs: Provide two, place in advance of lane to be closed.
6. Provide at obstructions, such as material piles and equipment.
7. Use to alert general public of construction hazards, which would include surface irregularities, unramped walkways, grade changes, and trenches or excavations in roadways and in other public access areas.

D. Existing Structures:

1. Where Contractor contemplates removal of small structures such as mailboxes, or signposts that interfere with Contractor's operations, obtain approval of Property Owner and Owner's Representative. Survey the location of the structure prior to its removal.
2. Move mailboxes to temporary locations accessible to postal service.
3. Replace items removed in their original location and a condition equal to or better than original.

E. Waterways: Keep ditches, culverts, and natural drainages continuously free of construction materials and debris.

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- F. Dewatering: Construct, maintain, and operate cofferdams, channels, flume drains, sumps, pumps, or other temporary diversion and protection works. Furnish materials required, install, maintain, and operate necessary pumping and other equipment for the environmentally safe removal and disposal of water from the various parts of the Work. Manage all water from the work in accordance with the Stormwater Pollution Prevention Plan and Transportation and Disposal Plan. Maintain foundations and parts of the Work free from water.
- G. Archaeological Finds: Should finds of an archaeological or paleontological nature be made within Site limits, immediately notify Owner and Owner's Representative. Continue the Work in other areas without interruption.
- H. Endangered and Threatened Species:
 - 1. Take precautions necessary and prudent to protect native endangered and threatened flora and fauna.
 - 2. Notify Owner's Representative of construction activities that might threaten endangered and threatened species or their habitats.
 - 3. Owner's Representative will mark areas known as habitats of endangered and threatened species prior to commencement of onsite activities.
 - 4. Additional areas will be marked by Owner's Representative as other habitats of endangered and threatened species become known during construction.

3.05 TEMPORARY CONTROLS

- A. Air Pollution Control:
 - 1. Minimize air pollution from construction operations.
 - 2. Burning of waste materials, rubbish, or other debris will not be permitted.
 - 3. Conduct earthwork and trucking operations to minimize dust. Strictly adhere to applicable environmental regulations for dust prevention.
 - 4. Conduct all air monitoring in accordance with the Air Monitoring Plan.
- B. Noise Control:
 - 1. Noise Control Plan: Propose plan to mitigate construction noise and to comply with noise control ordinances and noise requirements outlined in the Illinois Administrative Code (IAC) 35, Subpart H, Chapter 1, Part 900, including method of construction, equipment to be used, and acoustical treatments.

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2. Standard hours for operation of construction equipment are Monday through Friday from 7 a.m. to 6 p.m. Weekend hours can be added from 9 a.m. to 6 p.m. if necessary work permits and approval from the Owner's Representative have been obtained.

C. Water Pollution Control:

1. Comply with procedures outlined in U.S. Environmental Protection Agency manuals entitled, "Guidelines for Erosion and Sedimentation Control Planning" and "Implementation, Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity," Illinois's General NPDES Permit for Storm Water Discharges from Construction Site Activities (IEPA 2014), Illinois Administrative Code Title 35, Subtitle C, Chapter 1, Part 302, the National Pollutant Discharge Elimination System (NPDES) requirements (40 Code of Federal Regulations Parts 121 and 122 et seq., Illinois Urban Manual www.aiswcd.org/IUM ,and other applicable guidance documents or regulations." Comply with Earthwork Subcontractor's approved Stormwater Pollution Prevention Plan.
2. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, and rubbish.

D. Stormwater, Erosion, Sediment, and Flood Control:

1. Provide, inspect, maintain, and operate temporary facilities to control erosion and sediment releases, and to protect the Work and existing facilities from flooding during construction period.
2. To reduce erosion, and control stormwater run-on and runoff during construction activities, the following structural and nonstructural best management practices will be included in the Stormwater Pollution Prevention Plan and be implemented:
 - a. Minimize the area of bare soil exposed at one time (that is, phased excavation).
 - b. Minimize the amount of time an excavation is open.
 - c. Stabilizing cut-and-fill slopes.
 - d. Perimeter controls (such as drainage diversions).
 - e. Sediment basins and traps.
 - f. Silt fences at excavations.
 - g. Site restoration (for example, regrading, sodding, placing gravel, or repaving with asphalt or concrete).

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3. Prepare site only after adequate erosion and sediment controls are in place as discussed during the pre-construction meeting. Contractor will identify anticipated duration excavation will remain open and what will be required.

E. Dust Control:

1. The Contractor will comply with the fugitive dust control program and meet the applicable requirements of Air Pollution Control Rules, Illinois Administrative Code Title 35, Subtitle B, Chapter 1, Part 212 Visible and Particulate Matter Emissions, Subpart K.
2. The Contractor will be responsible for controlling the dust and airborne dirt generated by construction activities. Water or other suppression means will be used as needed to control dust.
3. The Contractor will perform street cleaning daily from the time earthwork is initiated until backfilling of excavations is complete. Additional street cleaning will be performed by the Contractor if directed by the Owner's Representative. Final street cleaning will be conducted prior to the removal of the temporary erosion control measures, such as inlet protection. Street cleaning will be performed with equipment that will capture debris after sweeping, using either mechanical collection methods or vacuum, to minimize fugitive dust emissions.
4. Street cleaning will be performed by the Contractor if directed by the Owner's Representative. Final street cleaning will be conducted prior to the removal of the temporary erosion control measures by the Contractor, such as inlet protection. Street cleaning will be performed with equipment that will capture debris after sweeping, using either mechanical collection methods or vacuum, to minimize fugitive dust emissions.
5. Sidewalks, driveways or similar surfaces adjacent to the excavation areas will be covered daily with 6 mil polyethylene (or equivalent) as possible from the start of excavation through completion of backfill. Manual cleaning will be performed daily if spillage occurs onto these surfaces.
6. All excavation activities will be performed in a manner that limits blowing dust and tracking of mud onto site access roads. Dust control measures may include vacuuming, water spraying, and sweeping or other methods allowed under local regulations. The Contractor will prepare a fugitive dust control plan that will address the management of stockpiles and staging piles and transport of bulk materials.
7. The Contractor will perform air monitoring at the stockpile area and residential properties in accordance with the Air Monitoring Plan.

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3.06 VEHICULAR TRAFFIC

- A. Comply with Laws and Regulations regarding closing or restricting use of public streets or highways. No public or private road will be closed, except by written permission of proper authority. Ensure the least possible obstruction to traffic and normal commercial pursuits.
- B. Conduct the Work to interfere as little as possible with public travel, whether vehicular or pedestrian.
- C. Whenever it is necessary to cross, close, or obstruct roads, driveways, and walks, whether public or private, provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.
- D. Road Closures: Maintain satisfactory means of exit for persons residing or having occasion to transact business along route of the Work. If it is necessary to close off roadway or alley providing sole vehicular access to property for periods greater than 2 hours, provide written notice to each Property Owner so affected 3 days prior to such closure. In such cases, closings of up to 4 hours may be allowed with Owner's Representative approval.
- E. When flaggers and guards are required by regulation or when deemed necessary for safety, furnish them with approved orange wearing apparel and other regulation traffic control devices.
- F. Notify fire department and police department before closing street or portion thereof, but maintain access for emergency vehicles to fire hydrants. Notify said departments when streets are again passable for emergency vehicles. Do not block off emergency vehicle access to consecutive arterial crossings or dead-end streets, in excess of 300 linear feet, without written permission from fire department. Conduct operations with the least interference to fire equipment access, and at no time prevent such access. Furnish Owner's Representative's night emergency telephone numbers to police department.
- G. Coordinate traffic routing with that of others working in same or adjacent areas.

3.07 SURFACE WATER CONTROL IN EXCAVATIONS

- A. Install temporary liners in excavated areas overnight, where possible, to prevent stormwater from contacting soils in open excavations. Anchor the temporary liners with sandbags or approved equivalent spaced along the perimeter of or within the excavation to prevent the liner from becoming displaced. Stormwater contained on top of the liner will be discharged as clean stormwater in accordance with the approved Stormwater Pollution Prevention Plan.

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- B. If an excavation is unable to be covered and standing water is present in the excavation when backfill must occur, and water cannot be allowed to infiltrate due to schedule or other constraints, Contractor will remove, contain, transport, and contain water at the FA for offsite disposal in accordance with the approved Transportation and Disposal Plan.
- C. Remove surface runoff controls when no longer needed.
- D. Provide supplemental ditches and sumps only as necessary to collect water from rain events. Do not use ditches and sumps as primary means of water control.

3.08 DISPOSAL OF IMPACTED EXCAVATION WATER

- A. The Owner's Representative will characterize excavation water that has contacted impacted soils as required by applicable laws and regulations.
- B. The Contractor will assist the Owner's Representative with collecting samples for analytical testing.
- C. The Contractor will dispose of impacted excavation water at a facility approved by the Owner's Representative and the USEPA under the CERCLA Offsite Rule, set forth in the National Contingency Plan, at 40 Code of Federal Regulations 300.440, Offsite Rule.

3.09 CLEANING DURING CONSTRUCTION

- A. Unless otherwise directed by the Owner's Representative, the Contractor will use street-sweeping equipment to sweep roadways, alleys, or other areas affected by the Work on a daily basis from the onset of excavation and continue until the removal of the temporary erosion control measures, such as inlet protection. Street sweeping equipment will contain debris after sweeping, through either mechanical means or with a vacuum, to minimize fugitive dust emissions.

3.10 DECONTAMINATION OF EQUIPMENT AND PERSONNEL

- A. Field equipment that has been used for excavation activities will be brushed free of all adhering soil materials (tires, tailgates, etc.) prior to leaving a residential property. Loose soil will be brushed off the tailgate, fenders, tires, mud flaps and other areas where it collected during loading operations. All decontamination will be performed by Contractor personnel with current 40-hour HAZWOPER training.

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- B. All field equipment leaving the FA, will be brushed free of all adhering soil materials (tires, tailgates, etc.) prior to leaving the FA. Loose soil will be brushed off the tailgate, fenders, tires, mud flaps and other areas where it collected during loading operations. All decontamination will be performed by Contractor personnel with current 40-hour HAZWOPER training.
- C. Wet decontamination will be performed on the decontamination pad at the staging area prior to use of equipment for backfill activities unless dedicated separate excavation and backfill equipment are used.
- D. Decontamination water will be contained with the stormwater that has contacted impacted soil and characterized for offsite disposal at an approved facility. Decontamination water will be contained in 55-gallon United Nations (UN)-approved drums, portable tank(s), or approved equivalent.
- E. Field equipment that has come into contact with any potentially contaminated material will be decontaminated. The equipment will be visually inspected for signs of contamination, and the cleaning procedure will be repeated until the equipment is visually clean. The Contractor will fully decontaminate all equipment on the decontamination pad at the staging area before leaving the site. All contaminated equipment will be cleaned by the Contractor, and inspected/accepted by Owner's Representative before leaving the site. All equipment decontamination will be documented in the field logbooks.

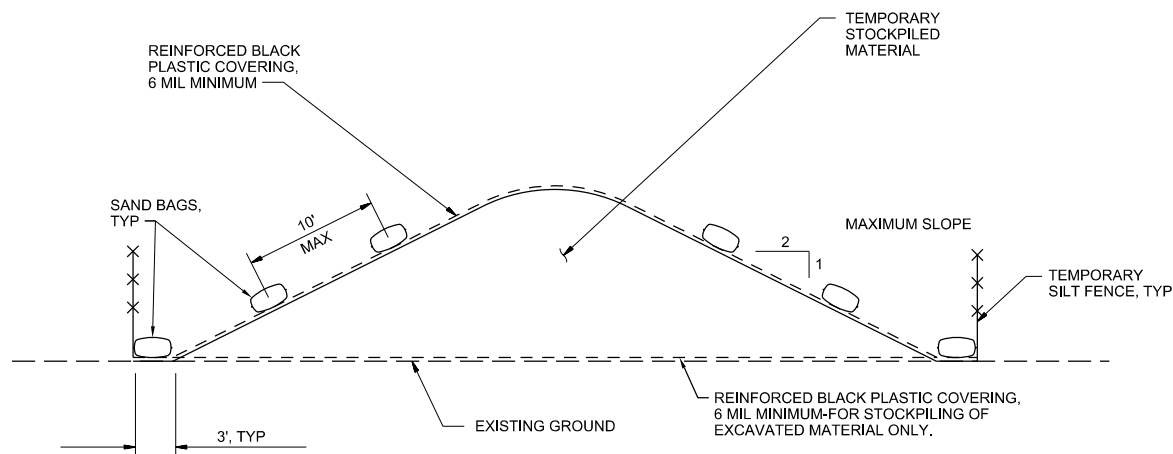
3.11 DEMOBILIZATION

- A. Upon completion of Work, all field equipment, temporary facilities, and other miscellaneous items (for example, barricades, caution tapes, and signs) resulting from or used during field operations will be removed.
- B. All wastes and general construction debris generated by construction activities will be properly disposed of offsite prior to demobilization.

3.12 SUPPLEMENT

- A. The supplement listed below, following "End of Section," are a part of this Specification:
 - 1. Standard Detail 3125-140, Temporary Stockpile Covering.

END OF SECTION



NOTES:

1. ALL SEAMS SHALL BE TAPED OR WEIGHTED DOWN FULL LENGTH. ALL SEAMS SHALL HAVE A MINIMUM 12" OVERLAP.
2. SEAMS PARALLEL TO THE SLOPE CONTOUR SHALL HAVE THE UPHILL SHEET OVERLAP THE DOWN HILL SHEET.
3. NO SURFACE RUN-OFF SHALL BE ALLOWED TO RUN UNDER THE PLASTIC COVERING.
4. DRAINAGE FROM AREAS COVERED BY REINFORCED PLASTIC SHEETING SHALL BE CONTROLLED SUCH THAT NO DISCHARGE OCCURS DIRECTLY ONTO UNCONTROLLED DISTURBED AREAS OF THE PROPERTY OR STAGING AREA.

DETAIL 3125-140 TEMPORARY STOCKPILE COVERING

OLD AMERICAN ZINC SUPERFUND SITE
PREFINAL DESIGN SUBMITTAL MAY 2018
REVISION - 0

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SUBMITTALS

A. Informational Submittals:

1. Submit prior to application for final payment.
 - a. Record Documents: All remaining record documents no previously submitted.
 - b. Special bonds, Special Guarantees, and Service Agreements.
 - c. Consent of Surety to Final Payment: As required in General Conditions.
 - d. Releases or Waivers of Liens and Claims: As required in General Conditions.
 - e. Releases from Agreements.
 - f. Final Application for Payment: Submit in accordance with General Terms and Conditions.

1.02 RECORD DOCUMENTS

A. Quality Assurance:

1. Furnish qualified and experienced person, whose duty and responsibility will be to maintain record documents.
2. Accuracy of Records:
 - a. Coordinate changes within record documents, making legible and accurate entries on each sheet of Drawings and other documents where such entry is required to show change.
 - b. Purpose of Project record documents is to document factual information regarding aspects of the Work.
3. Make entries as Work progresses.
4. Prior to submitting each request for progress payment, request Owner's Representative's review and approval of current status of record documents. Failure to properly maintain, update, and submit record documents may result in a deferral by Owner's Representative to recommend whole or any part of Contractor's Application for Payment, either partial or final.

SURROUNDING PROPERTIES REMEDIAL DESIGN
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PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 MAINTENANCE OF RECORD DOCUMENTS

A. General:

1. Following award of the Work, Engineer will provide electronic drawing files of the residential sites and a database of property addresses.
2. Redline markups of approved construction documents will be accepted as Record Drawings.
3. Record information concurrently with construction.

B. Preservation:

1. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
2. Make documents and Samples available at all times for observation by Owner's Representative and Engineer.

C. Making Entries on Drawings: As indicated in Section 01 31 13, Project Coordination.

END OF SECTION

SURROUNDING PROPERTIES REMEDIAL DESIGN
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SECTION 31 10 00
SITE PREPARATION

PART 1 GENERAL

1.01 GENERAL

- A. Items specified within this section are to be completed by the Contractor.

1.02 DEFINITIONS

- A. Interfering or Objectionable Material: Trash, rubbish and debris; vegetation and other organic matter, whether alive, dead or decaying.
- B. Clearing: Removal of interfering or objectionable material lying on or protruding above ground surface, including trees, stumps, roots and shrubs.
- C. Obstructions: Swing sets, benches, landscaping features, ground cover materials and borders, and other movable encumbrances to soil excavation.
- D. Excavation Limits: Areas, as shown or specified, within which Work is to be performed.
- E. Permanent Structures: Buildings, decks, stairs, sheds, telephone poles, pavements, utilities (above and below grade), and similar structures.
- F. Permanent Surfaces: Paved sidewalks, driveways, parking areas, roads, gravel surfaces, and similar structures constructed adjacent to or within the area of work. Paver patios and walkways not planned for removal, but will be evaluated on a property specific basis.

1.03 SCHEDULING AND SEQUENCING

- A. The excavation area surveys will be reviewed in the field to locate pre-construction control points and existing elevations.
- B. Prepare property only after adequate security, safety, and erosion and sediment controls are in place as discussed during the Initial Preconstruction Meeting and specified in other sections.

**SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE**

- C. Prior to removal of any trees, shrubs or obstructions, inspect for bird nests if the clearing is to be performed between April 1 and September 1. The inspection shall be performed during the Residential Pre-construction Meeting and again within 24-hours prior to clearing in consultation with the Owner's Representative. If bird nests are in trees or shrubs designated for removal or obstructions that will be temporarily relocated and stored, the nests shall be inspected for the presence of eggs or hatchlings. Written documentation of the inspection shall be provided to the Owner's Representative. If present, do not disturb the nest; halt the clearing and consult with the Owner's Representative and the Marion Field Office of the US Fish and Wildlife Service and other appropriate agencies to assure compliance with the Migratory Bird Treaty Act.

PART 2 PRODUCTS

2.01 HIGH-VISIBILITY FENCE

- A. Orange high density polyethylene in new condition.
- B. Forty-eight inches in height.

2.02 T-POSTS

- A. Galvanized steel.
- B. Seventy-two inches in height.

PART 3 EXECUTION

3.01 GENERAL

- A. Site preparation will include utility notification and coordination, removal of encumbrances to work, protection of trees, shrubs, vegetation not planned for removal, and protection of Permanent Structures and Permanent Surfaces.
- B. Utility Notification and Coordination:
 - 1. The Owner's Representative will interview the Property Owner (and tenant, if applicable) with the Contractor during the Initial Preconstruction Meeting to determine if there are any undocumented private utilities, such as irrigation systems, underground electric or gas lines, drain tile or underground active or abandoned tanks in the Work area.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

2. The Contractor will contact JULIE and use a third-party utility locating service to identify utilities before work begins at each property. The Contractor will verify the completion of the utility locates and submit documentation to Owner's Representative a minimum of 3 days prior to beginning any intrusive activities at each property. The Contractor will record the location of the utilities on the property sketch for permanent documentation.
 3. The Contractor will review the utility locations, including connections to structures, during residential property preparatory phase meetings.
 4. Coordinate the Work with various utilities within Project limits. Notify applicable utilities if damage occurs or if conflicts or emergencies arise during Work.
 5. Utility Locator: JULIE
 - a. Telephone: 800-892-0123.
 6. Ameren Illinois (Electric and Gas):
 - a. Telephone (7:30 AM – 5:00 PM): 888-659-4540.
 7. Illinois American Water – East St. Louis Distribution (Water):
 - a. Telephone: 618-874-0523.
 8. Sewerage (Metro East Sanitary District):
 - a. Telephone: 618-876-1806.
- C. The excavation areas will be marked in the field by the Contractor in a manner to allow identification and inspection during execution of the Work.
- D. Orange plastic construction barrier fence, minimum 36-inch height, shall be installed around the excavation and work areas using steel "T" post spaced at 6-foot centers to separate pedestrian traffic from the work. The fence will be secured around open excavations before the end of each work day.
- E. Take necessary measures to protect existing Permanent Structures, Permanent Surfaces (i.e. sidewalks and patios), fencing and trees (or other vegetation) not planned for removal on or adjacent to the site from construction activities.
- F. This work includes removing sections of fencing and gates as necessary to allow access for the soil removal and restoration areas for each property. Fencing will remain in place where possible. Where necessary, fencing will be removed in a manner to protect it for reinstallation and reuse. Actual reuse will be based on site-specific evaluation of conditions. Fence openings made for access will be secured at the end of each work day to provide an equivalent level of security during non-working hours. All fencing not reused will be disposed of and replaced in-kind by the Contractor during restoration.

SURROUNDING PROPERTIES REMEDIAL DESIGN
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- G. Obstructions, including outdoor play equipment, benches, and other encumbrances to soil excavation, will be tagged and removed from the property or relocated to an area of the property unaffected by Work. The Contractor will provide secure temporary storage at the FA during construction. Obstructions removed from the property will be securely stored and returned upon completion of restoration.
- H. Obstructions including landscaping features and borders are to be removed and stored for reuse or replaced as part of the restoration work, with like kind materials during restoration.
- I. Tree stumps and roots required to be removed are considered contaminated and will be live-loaded and mulched at the FA. During stump removal, tree roots that would impede excavation will either be ground or removed without pulling so that impacted soil may be removed to target depth.
- J. Trees, shrubs and other aboveground vegetation required to be removed will be mulched and stockpiled at the FA in its own stockpile. Vegetative debris will not be placed in the soil staging pile. Surface debris, such as bricks, concrete pieces and other materials that will not be stored and reused, shall be segregated, cleaned of soil and vegetation and disposed of as non-contaminated waste. The scope of this Work shall be included in the unit price per ton provided in the Bid Form and validated by weight tickets.
- K. Ensure that stormwater runoff control is installed and erosion and sediment controls are in place according to the Stormwater Pollution Prevention Plan and best management practices prior to excavation. Stormwater runoff controls shall, at a minimum, prevent migration to storm sewers, street gutters, streets, sidewalks, and driveways.
- L. Plywood with a thickness of 3/4-inch, or approved equivalent, will be placed on the ground surface if small equipment will travel through a tree drip-line or yard area(s) not scheduled for excavation to access the excavation area. The plywood will be secured to the ground to prevent its movement.

3.02 LIMITS

- A. Clearing and excavation is not to extend beyond excavation limits established during design and finalized during the Initial Preconstruction Meetings.
- B. Manually remove all vegetation in the buffer between the excavation extents and permanent structures, such as residence, mobile home supports, garage and sheds and surfaces, such as driveways or sidewalks. Grasses or groundcover shall be removed to a depth of 2.5 to 3 inches below grade. Removal may be performed manually or by using a sod cutter or equivalent as approved by Owner's Representative.

SURROUNDING PROPERTIES REMEDIAL DESIGN
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- C. Grasses and topsoil will be stockpiled at the soil staging pile on the FA with other soils excavated from the properties and alleyways.

3.03 REMOVAL OF INTERFERING OR OBJECTIONABLE MATERIALS

- A. Remove rubbish, trash and debris from work area as agreed during the Initial Preconstruction Meeting.
- B. Temporary relocation of large items, such as vehicles, will be coordinated with the Property Owner during the Initial Preconstruction Meeting.

3.04 REMOVAL OF INTERFERING PLANTINGS

- A. Remove trees, shrubs, and perennials that are designated for removal or interfere with construction activities with the approval of the Owner's Representative and Property Owner.
- B. Record sufficient information to uniquely identify each plant removed for accurate replacement and the location of each plant.

3.05 CLEARING

- A. Clear areas within excavation limits shown or specified.
- B. Cut off designated shrubs, brush, weeds and grasses flush with ground surface, including within planting beds.
- C. Trees slated for removal will be measured to determine their diameter at breast height per Section 32 93 00, Plants.
- D. Trees equal to or larger than 4 inches in diameter at breast height will be systematically cut up and removed in pieces from the top down by a licensed and bonded tree service. Stumps will be ground out or otherwise removed to a minimum depth of 12 inches below ground surface or at least as deep as the target excavation depth. Removal of stumps includes removal of lateral roots that would impede mechanical excavation.

3.06 DISPOSAL

- A. Dispose of debris offsite, which may consist of rubbish, trash materials and debris. Large items, such as vehicles, will not be disposed of and only temporarily relocated after coordination with the Property Owner.
- B. All wood and vegetative debris will be mulched and stockpiled separately from the excavated soil and borrow material stockpiles. Wood chips may not be reused on or offsite.

END OF SECTION

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

SECTION 31 23 16
EXCAVATION

PART 1 GENERAL

1.01 GENERAL

- A. Items specified within this section to be completed by the Contractor.

1.02 DEFINITIONS

- A. Permanent Structures: As defined in Section 31 10 00, Site Preparation.
- B. Permanent Surfaces: As defined in Section 31 10 00, Site Preparation.

1.03 SUBMITTALS

- A. Draft filled-in non-hazardous waste manifest prior to the start of excavation, for liquid waste and general debris (i.e. bricks, concrete pieces, etc.).
- B. Draft filled-in hazardous waste manifest if determined by Owner's Representative to be required.
- C. Certificate of Destruction/Disposal.
- D. Haul tickets (submitted daily).
- E. Load trip tickets, documenting the number of trips, material and approximate load quantity from each property or alleyway to the FA. Format to be approved by the Owner's Representative.
- F. Completed non-hazardous waste manifests (submitted daily).

1.04 QUALITY ASSURANCE

- A. Provide adequate survey control to avoid unauthorized over excavation (lateral and vertical).

1.05 WEATHER LIMITATIONS

- A. Excavation will not be performed during inclement weather.

**SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE**

1.06 SEQUENCING AND SCHEDULING

- A. Complete applicable work requirements of Section 01 11 00, Summary of Work, Section 01 50 00, Temporary Facilities and Controls, and Section 31 10 00, Site Preparation, prior to excavation.
- B. Contractor will sequence work to minimize the time that excavations remain open.
 - 1. No more than three properties will be open (excavation has been started or completed, but backfill activities have not begun) at the same time per excavation crew.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. Means and methods of access to soil excavation areas will be determined on a property-specific basis. The scope may include use of mechanical equipment and/or manual excavation, depending on site conditions. Contractor will determine the method(s) to access and excavate the properties in accordance with the specifications.
- B. Boundaries of the Work estimated for each property will be shown on the property drawings. Excavation boundaries are defined by the remedial investigation, and predesign sampling and will be confirmed or modified during Initial Preconstruction Meetings with concurrence from the Property Owner. Horizontal excavation limits will be performed to within 0.00 foot to plus 0.20 foot of the excavation boundaries shown on the Drawings.
- C. Depth of the Work for each site will be shown on the property drawings. Over-excavation tolerance is plus 0.10 foot, and under-excavation tolerance is minus 0.00 foot. Owner's Representative may limit the depth of excavation if it is believed that further excavation may result in damage to structures or present safety hazards.
- D. Do not over excavate without written authorization of Owner's Representative.
- E. Remove or protect obstructions as shown and as specified in Section 01 50 00, Temporary Facilities and Controls, Article Protection of Work and Property.

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- F. Manually excavate within 18-inches in all directions of the approximate underground utility markings in accordance with Illinois's Underground Utility Facilities Damage Prevention Act Illinois Compiled Statutes (ILCS) 220 50/ (220 ILCS 50/) and JULIE Excavator Handbook to verify actual location of the utility, and make provisions to support and protect utilities during excavation and backfill. The depth of underground utility varies by type and by property, so hand excavation should be performed with minimal force at any depth within the utility corridor.
- G. Manually excavate around fire hydrants, monitoring wells, sign posts and similar features to prevent damage from heavy equipment.
- H. Limits of construction for soil excavation are as follows (not inclusive of all limits):
 - 1. One (1) foot offset from permanent structures and sloping away from the structure at a maximum slope of 1 horizontal to 1 vertical.
 - 2. Three (3) feet offset from mobile home support point loads at a maximum slope of 1 horizontal to 1 vertical.
 - 3. Zero feet up to a maximum of 6-inches offset from permanent surfaces based on the integrity of the surface. Excavate from ground surface at a maximum slope of 1 horizontal to 1 vertical.
 - 4. Zero feet offset from property lines.
 - 5. Manually excavate up to within 6-inches of permanent structure, depending on its condition, where garden is adjacent to a permanent structure to minimize remaining impacted soil in areas of high contaminated soil exposure potential.
 - 6. Manually excavate the top 2.5 to 3 inches of grasses or groundcover in the offset areas to remove contaminated surface soils, and place in soil staging pile at FA.
 - 7. The excavation depth and extents will be identified on the property drawings with exception of:
 - a. Additional sampling performed to refine the excavation extent to address property owner concerns (i.e., specific plants, gardens, etc.) as approved by Owner's Representative.
 - 8. If suspected contaminated fill is observed anywhere in the excavation, the Owner's Representative must be notified immediately. At the direction of the Owner's Representative, additional excavation may be performed to remove suspected contaminated fill. Post-excavation surveys will not be performed without authorization from Owner's Representative if suspected contaminated fill is observed.

SURROUNDING PROPERTIES REMEDIAL DESIGN
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9. When the Contractor is satisfied that an excavation is to the specified lines and grades, with confirmation from the Post-Excavation survey, the Owner's Representative will be notified and will perform an inspection. After inspection and approval, Owner's Representative will authorize the Contractor to proceed with backfilling of the excavation.
- I. Immediately notify Owner's Representative if unanticipated subsurface features are encountered during excavation, including, but not limited to, fill materials or debris, french drains, drain tile, unknown electrical and plumbing lines, and other similar conditions.
- J. Excavated soil will be direct loaded into lined trucks. If soil is dry and the truck bed is in good condition with a sealed end-gate, a liner may not be required, if approval is obtained by the Owner's Representative. Wet soil that has the potential to leach water during transportation must be placed in a lined truck.
- K. To the maximum extent practical unless otherwise approved by the Owner's Representative, trucks transporting excavated soil from residential areas to the FA must be loaded in a manner that avoids the trucks entering the excavation exclusion zone and requiring decontamination.
- L. Any trucks or other equipment entering and later exiting an excavation area will be brushed free of all adhering soil material (tires, tailgates, etc.) prior to exiting the excavation area. Loose soil will be brushed off the tailgate, fenders, tires, mud flaps and other areas where it may have collected.
- M. Ground covering must be used when loading trucks at the site of excavation to contain all inadvertent spillage that may occur during loading as described in Part 3.05(C) below.
- N. The Contractor will immediately sweep up or otherwise contain any over-spill material that may occur during loading.
- O. All trucks entering the FA to dump excavated soils and then exiting the FA to return to an excavation site will be brushed free of all adhering soil material (tires, tailgates, etc.) prior to leaving the waste soil containment area. Loose soil will be brushed off the tailgate, fenders, tires, mud flaps and other areas where it may have collected.

SURROUNDING PROPERTIES REMEDIAL DESIGN
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3.02 EXCAVATION AT OR ADJACENT TO PROTECTED TREES AND SHRUBS

- A. Manual excavation will be performed around tree roots as specified below:
 - 1. Excavation within an 8-foot radius of the tree trunk (unless otherwise indicated on the Drawings) will be limited to manual excavation to the full excavation depth, if possible.
 - 2. Manual excavation will expose woody roots 1 inch in diameter or greater to preserve the roots.
 - 3. Outside of the 8-foot radius from the tree trunk, mechanical excavation will be allowed to the required depth using a mini excavator, or approved equivalent, and spotter to remove soils between 1 inch diameter or larger roots previously exposed by manual excavation.
 - 4. If roots are damaged, Contractor will perform corrective pruning to create a clean cut and promote quick wound closure and regeneration.
- B. Protect from damage and preserve trees, shrubs, and other plants outside excavation limits.
 - 1. Provide and maintain temporary barricades around trees.
 - 2. Employ manual excavation as specified to minimize tree injury.
 - 3. Cover temporarily exposed roots with wet burlap, and keep burlap moist until soil is replaced around roots.
 - 4. Water vegetation, as necessary, to maintain health.
 - 5. Do not stockpile materials or permit unprotected traffic within drip lines of trees.
- C. In event of damage to bark, trunks, limbs, or roots of plants that are not designated for removal, treat damage by corrective pruning and other accepted horticultural and tree surgery practices. Costs incurred for these activities will be entirely by the Contractor and not reimbursed by Owner's Representative, Engineer, or Owner.

3.03 REMOVAL OF EXCAVATED MATERIAL

- A. This task includes transporting the excavated material from the property. Properties may be adjacent to a sidewalk, boulevard, and/or street. Contractor will determine and propose the best method to load the excavated soil for transporting to the FA, making reasonable efforts to minimize migration of contaminated soil.
- B. The Contractor will perform work as outlined and approved in the Transportation and Disposal Plan.

SURROUNDING PROPERTIES REMEDIAL DESIGN
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- C. Contractor will provide means and methods to remove and transport excavated material to the FA and to the approved licensed offsite disposal facility.

3.04 STOCKPILING EXCAVATED MATERIAL

- A. Excavated materials will not be allowed to be stockpiled except at the FA with proper controls in place. Excavated material will be staged at the FA within approved areas.
- B. Post signs identifying material stockpiled. Post signs that are readable from all directions of approach to the staging pile. Signs should be clearly worded and readable.
- C. Excavated soil may be temporarily staged within the extent of the excavation prior to loading the soil for transport to the FA. Temporary staging piles will be removed before the end of construction activities each day.
- D. Do not stockpile excavated material outside of the excavation extents or within tree drip zones.
- E. Do not stockpile excavated materials near or over existing utilities, facilities, adjacent property, or completed Work, or within the tree drip line.
- F. Protection against staging pile runoff will be implemented in accordance with the approved Stormwater Pollution Prevention Plan.

3.05 LOADING OF EXCAVATED MATERIAL

- A. This task includes all moving, handling and loading of excavated material for transportation. Sequencing of moving, handling and loading of trucks is to be done in accordance with the Subcontractor's Transportation and Disposal Plan.
- B. Trucks will be loaded, within allowable hauling weight limits, prior to transporting the excavated materials to the FA for staging.
- C. A temporary ground covering, 6 mil polyethylene or equivalent, will extend a minimum of 2 feet under trucks to minimize the potential for soil to spill into roadways or other areas not requiring remediation.

3.06 TRANSPORTATION, STAGING AT FA, AND DISPOSAL

- A. The exterior of each transportation vehicle and load of waste will be visually inspected and all loose soil/material removed and collected before leaving the site.

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- B. Each truckload or container will be lined, unless directed otherwise by the Owner's Representative, and covered with a fully functioning automatic tarp system that satisfies local, county, state and federal regulations prior to transporting the excavated materials to the FA.
- C. Transportation of nonhazardous wastes will be completed by a transporter licensed for commercial transportation in the State of Illinois. The transporter will adhere by and be in compliance with all regulatory requirements under 49 Code of Federal Regulations (CFR).
- D. Transporters will be required to abide by the health and safety plan, including PPE requirements when outside the vehicle. The Owner's Representative will not be responsible for any demurrage or other costs as a result of turning away a driver who does not comply with project health and safety requirements.
- E. Each driver will maintain proof of insurance for their truck and valid commercial driver's license in their truck.
- F. Vehicle fueling, lubrication, and maintenance may be performed on onsite with Owner Representative's approval, and in accordance with all local, state, and federal regulations. Spill control materials must be available at the fuel/maintenance site in adequate quantities to control solid or liquid spills.
- G. Excavated soil removed from the residential properties will be transported and staged at the FA.
- H. Non-hazardous manifests, bills of lading, and hazardous waste manifests (if applicable) will be prepared by the Contractor and signed by the Owner's Representative on behalf of USEPA. Contractor will provide completed draft manifests to Owner's Representative prior to beginning excavation work. A load trip ticket, or Owner's Representative-approved equivalent transportation form, will accompany each load from the residential properties, stating the time, material being hauled, and approximate load quantity of every trip from each property or alleyway to the FA.
- I. The following procedures also will be observed when transporting wastes:
 - 1. Waste material transportation will comply with federal, state and local regulations.
 - 2. Impacts to general public traffic will be minimized.
 - 3. If road damage is caused by construction and/or hauling traffic, the damage will be repaired by the Contractor.
 - 4. Material spilled during the work or in transit will be reported to the Owner's Representative immediately and cleaned up in accordance with the Transportation and Disposal Plan.
 - 5. Safety and spill response procedures will be followed.

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6. Sealed trucks will be used to transport liquids or wet materials.
7. No materials from other projects will be combined with materials from this site.
8. The approved Transportation and Disposal Plan will be followed.

3.07 STAGING OF EXCAVATED MATERIAL AT THE FA

- A. This task includes all moving, handling and loading of excavated material for placement at the FA. Sequencing of moving, handling and loading of trucks is to be done in accordance with the Contractor's Transportation and Disposal Plan.
- B. Soil Staging Pile will be no greater than 10 feet high and sloped no greater than 4 to 1.
- C. Soil Staging Pile will be located at a location at the FA such that offsite migration of staged soil is prevented.
- D. Soil Staging Pile will be covered with plastic sheeting at the end of the workday and during inclement weather.
- E. Stockpiles will not be placed over existing monitoring wells, or prohibit access to existing monitoring wells located within the FA.

END OF SECTION

SURROUNDING PROPERTIES REMEDIAL DESIGN
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SECTION 31 23 23
FILL AND BACKFILL

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. ASTM International (ASTM):
 - a. C117, Standard Test Method for Materials Finer Than 75-Micrometers (No. 200) Sieve in Mineral Aggregates by Washing.
 - b. C136, Standard Method for Sieve Analysis of Fine and Coarse Aggregates.
 - c. D75, Standard Practice for Sampling Aggregates.
 - d. D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - e. D1556, Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
 - f. D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 - g. D4253, Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
 - h. D4254, Standard Test Method for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
 - i. D6938, Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
2. Illinois Environmental Protection Agency:
 - a. Illinois Administrative Code Title 35, Part 724.
 - b. Tiered Approach to Corrective Action Residential Criteria, Appendix B, Table A.
3. Illinois Department of Transportation (IDOT): Manual of Test Procedures for Materials, Illinois Test Procedure 11, Materials Finer than No. 75 μ m, (No. 200) Sieve in Mineral Aggregates by Washing.

1.02 DEFINITIONS

- A. Compliance Sample: Sample collected from borrow source, which has not previously been sampled, for analyses of contaminant concentration and geotechnical parameter to confirm identification of borrow source.

SURROUNDING PROPERTIES REMEDIAL DESIGN
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- B. Continued Compliance Sample: Sample collected from previously identified and approved borrow source.
- C. Relative Compaction:
 - 1. Ratio, in percent, of as-compacted field dry density to laboratory maximum dry density as determined in accordance with ASTM D698.
 - 2. Apply corrections for oversize material to either as-compacted field dry density or maximum dry density, as determined by the Owner's Representative.
- D. Optimum Moisture Content:
 - 1. Determined in accordance with ASTM Standard specified to determine maximum dry density for relative compaction.
 - 2. Determine field moisture content on basis of fraction passing 3/4-inch sieve.
- E. Relative Density: Calculated in accordance with ASTM D4254 based on maximum index density determined in accordance with ASTM D4253 and minimum index density determined in accordance with ASTM D4254.
- F. Completed Course: A course or layer that is ready for next layer or next phase of Work.
- G. Lift: Loose (uncompacted) layer of material.
- H. Well-Graded:
 - 1. A mixture of particle sizes with no specific concentration or lack thereof of one or more sizes.
 - 2. Does not define numerical value that must be placed on coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters.
 - 3. Used to define material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids.
- I. Influence Area: Area within planes sloped downward and outward at 45-degree angle from horizontal measured from:
 - 1. 1 foot outside outermost edge at base of foundations or slabs.
 - 2. 1 foot outside outermost edge at surface of roadways, shoulder, or sidewalk.
 - 3. 2 foot outside exterior at spring line of pipes or culverts.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

- J. Imported soils utilized for this project are from offsite sources and described in the classifications as follows:
1. General Backfill (-6 inches to maximum excavation depth, excluding areas where select topsoil will be placed in properties, or -8 inches to maximum excavation depth in alleyways): as defined in this Section.
 2. Granular Fill (adjacent to, beneath, or within influence area of structures): As defined in this Section.
 3. Gravel (-6 inches to finish grade in designated areas shown in property drawing or -8 inches to finish grade in alleyways): As defined in this Section.
 4. Topsoil (uppermost 5 inches of soil to be placed in areas of sod at residential properties): As defined in Section 32 91 13, Topsoil Preparation.
 5. Select Topsoil (uppermost 18 inches [or entire excavation depth if less than 18 inches] to surface finish grade in gardens and landscaping areas): As defined in Section 32 91 13, Topsoil Preparation.
- K. Imported Material: Materials obtained from sources offsite, suitable for specified use.
- L. Standard Specifications: When referenced in this section, will mean Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.
- M. Geotechnical Manual: When referenced in this section, will mean Illinois Department of Transportation Geotechnical Manual, latest edition.

1.03 SUBMITTALS

- A. Action Submittals:
1. A table describing borrow sources and a site drawing will be submitted identifying location(s) of borrow areas, and of any samples with respect to the specific borrow area at the borrow source. This will be provided by the Contractor within 5 days from Notice of Award. Owner will review and approve the selected borrow source and all analytical results prior to import of backfill and/or topsoil to the site.
 2. Continued compliance samples, as described below in Part 2.01 of this Section will be collected by the Owner's Representative with Contractor assistance. The Owner's Representative will submit to the Laboratory Contractor for the following analyses:
 - a. Chemical analyses of source materials (contaminants, fertility, and salinity). Chemical analyses are not required for gravel.

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- b. Gradation and standard proctor analyses of source materials:
 - 1) For gravel, provide a materials sheet from the borrow source indicating that the material meets the IDOT specifications.
A gradation analysis is not required.
- c. Contractor compaction test results.

B. Informational Submittals: Manufacturer's data sheets for compaction equipment.

1.04 QUALITY ASSURANCE

A. Notify Owner's Representative when:

- 1. Whenever subgrade is ready for backfilling or when backfilling operations are resumed after a period of inactivity.
- 2. Whenever visual indications of suspected contaminated fill are observed in the excavation. Suspected contaminated fill may consist of ash, slag, sinter, clinkers, and stained or discolored soil.
- 3. Soft or loose subgrade materials are encountered.
- 4. Fill material appears to be deviating from Specifications.

B. Contractor will perform 2 compaction tests in place per lift per yard area, unless directed otherwise by the Owner's Representative. Locations of compaction tests will be spread out over the footprint of the area being backfilled. Owner's Representative may direct Contractor to perform additional compaction testing for quality assurance on a random basis in a manner to minimize interruption to backfill and compaction operations. The compaction tests will be performed in accordance with ASTM D698.

1.05 SEQUENCING AND SCHEDULING

- A. Complete applicable Work specified in Section 31 10 00, Site Preparation and Section 31 23 16, Excavation; prior to placing materials described in this Section.
- B. Perform Survey in accordance with Section 01 31 13, Project Coordination prior to performing Work specified under this section.
- C. Complete Work specified in this Section after receiving authorization from Owner's Representative upon inspection of final excavation depth.
- D. Complete Work specified in this section within 7 days of the completion of excavation at a property.

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PART 2 PRODUCTS

2.01 SOURCE QUALITY CONTROL

- A. Source quality control samples will be collected for the analyses listed in this section. If backfill materials are from different borrows or areas, separate samples will be collected and tested for each at the specified frequencies.
- B. Contractor will coordinate with Owner's Representative when identifying new borrow source(s) to be used for backfill to ensure that compliance samples collected from the borrow source at a frequency of 1 sample per 1,000 cubic yards are representative of materials transported to the site. Compliance samples will be collected by the Owner's Representative with Contractor assistance.
- C. The Owner's Representative will submit the compliance samples to the laboratory for testing for the following analyses:
 - 1. Chemical analyses: target compound list (TCL) organics (volatile organic compounds [VOCs] and semi-volatile organic compounds [SVOCs]), TCL pesticides, TCL polychlorinated biphenyls (PCBs), herbicides, and target analyze list (TAL) metals.
 - 2. Fertility and salinity.
- D. The Owner's Representative will collect one sample per 1,000 cubic yards of backfill material for gradation analysis and standard proctor when identifying borrow source(s) to be used for backfill. The Contractor will assist the Owner's Representative with sample collection. Samples may be collected more often as determined by Owner's Representative, if variation in gradation is occurring, or if material appears to depart from Specifications. Samples will be submitted by the Owner's Representative to the laboratory for testing.
- E. After borrow source(s) are identified and approved, Contractor will collect continued compliance samples throughout the RA at a frequency of one sample per 1,000 cubic yards (or more often as determined by Owner's Representative) of backfill material for chemical analysis in 2.01 C.1 and D.
- F. The materials must meet the Illinois Environmental Protection Agency Tiered Approach to Corrective Action (TACO) Residential Criteria (Illinois Administrative Code Title 35, Part 724, Appendix B, Table B) or project cleanup criteria to be determined to be "clean."

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2.02 GENERAL BACKFILL

- A. In accordance with IDOT Standard Specifications for Road and Bridge Construction, Sections 204 and 205, and in accordance with Table 8.4-1 of the IDOT Geotechnical Manual.
- B. Free from rocks larger than 3 inches, from roots, peat, and other organic matter, ashes, cinders, trash, debris, and other deleterious materials.
- C. Will not contain more than 10 percent gravel, stones, or shale particles.

2.03 GRAVEL

- A. Free from clods, organic matter, or other deleterious material.
- B. Provide materials in accordance with current IDOT Standard Specifications for Road and Bridge Construction, gradation CA-6.
- C. Physical Qualities: Per Section 1004 of the IDOT Standard Specifications for Road and Bridge Construction.
- D. Gradation: Per 1004 of the IDOT Standard Specifications for Road and Bridge Construction.

2.04 WATER FOR MOISTURE CONDITIONING

- A. Free of hazardous or toxic contaminants, or contaminants deleterious to proper compaction.

PART 3 EXECUTION

3.01 GENERAL

- A. Keep placement surfaces free of water, debris, and foreign material during placement and compaction of fill and backfill materials.
- B. This work includes transportation and installation of all materials to the project site.
- C. Stockpile and manage General Backfill, Gravel, Topsoil, and Select Topsoil as follows:
 - 1. These materials will not be allowed to be stockpiled overnight except at the FA staging area with proper controls in place. These materials may be staged and stockpiled at the FA within approved areas.

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2. Post signs identifying material stockpiled. Post signs that are readable from all directions of approach to each stockpile. Signs should be clearly worded and readable.
 3. Materials for backfilling may be temporarily stockpiled within the extent of the excavation prior to placement. Temporary stockpiles will be spread out or otherwise removed before the end of construction activities each day.
 4. Do not stockpile materials near or over existing utilities, facilities, adjacent property, or completed Work, or within the tree drip line.
 5. Protection against stockpile runoff will be implemented in accordance with the approved Stormwater Pollution Prevention Plan.
- D. Prior to placing backfill in alleyways, a proof roll will be performed on the underlying subbase material with a fully loaded quad-axle dump truck. Soil will be removed from areas with excessive settlement or pumping, until firm material is encountered. Unsuitable base material is considered to be soil with excessive settlement or pumping (greater than 1-inch rebound), and will be removed and replaced with general backfill, as defined in this specification.
- E. General Backfill material within lawn areas and outside the influence area will be placed at various depth intervals up to the depth of topsoil specified in Section 32 91 13, Topsoil Preparation or other surface fill material specified in property drawing. General Backfill will be compacted to between 85 and 95 percent maximum dry density as determined by ASTM D698 (Standard Proctor) in no greater than 6-inch lifts. Compaction will not exceed 95 percent maximum dry density. The backfilled areas will be compacted in a manner that prevents differential settlement, sink holes, subsidence, etc., and will warrant against same for 1 year. All work associated with repairing backfilled areas will be the responsibility of the Contractor.
- F. General Backfill material within alleyways will be placed in accordance with IDOT Standard Specifications for Road and Bridge Construction, Sections 204 and 205, and meet the requirements outlined in Table 8.4-1 of the IDOT Geotechnical Manual. General Backfill within alleyways will be compacted to a minimum of 95 percent maximum dry density as determined by ASTM D698 (Standard Proctor) in no greater than 6-inch lifts. The backfilled areas will be compacted in a manner that prevents differential settlement, sink holes, subsidence, etc., and will warrant against same for 1 year. All work associated with repairing backfilled areas will be the responsibility of the Contractor.

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- G. If General Backfill is classified as ML or CL in accordance with the Unified Soil Classification System (ASTM D2487), moisture content during placement will be within minus 3 percent to zero percent of its optimum moisture content as determined by ASTM D698.
- H. General Backfill will not be placed in excavations with standing water or unstable subgrade conditions. General Backfill will be placed in a manner that does not disturb or damage surrounding structures or utilities. The backfilled areas will be graded away from structures to suit the elevation of the surrounding area and such that there will be no ponding of water.
- I. Gravel will be placed in accordance with IDOT Standard Specifications for Road and Bridge Construction, Section 205.04 – Placing Material, and all relevant sections of Division 300 – Subgrades, Subbases, and Base Courses, and compacted in accordance with IDOT Standard Specifications for Road and Bridge Construction, Section 205.06 – Compaction.
- J. Place and spread fill and backfill materials in horizontal lifts of uniform thickness, in a manner that avoids segregation, and compact each lift to specified densities prior to placing succeeding lifts. Slope lifts only where necessary to conform to final grades or as necessary to keep placement surfaces drained of water.
- K. During filling and backfilling, keep level of fill and backfill around each structure even.
- A. Do not place backfill, if material is frozen or overly saturated, or if surface upon which backfill is to be placed is frozen or overly saturated.
- B. Do not use sections of prepared ground surface as haul roads. Protect prepared subgrade from traffic.
- C. Maintain prepared ground surface in finished condition until next course is placed.
- D. Tolerances:
 - 1. Final Lines and Grades: Within a tolerance of 0.10 for vertical excavation limits and of 0.20 foot for horizontal excavation limits unless dimensions or grades are shown or specified otherwise.
 - 2. Grade to establish and maintain slopes and drainage as shown.
- E. Settlement: Correct and repair any subsequent damage to structures, pavements, curbs, slabs, piping, and other facilities, caused by settlement of fill or backfill material.

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3.02 DEMARCATION FENCING

- A. Place high-visibility fence in the bottom of the excavation at properties at the direction of the Owner's Representative.

3.03 BACKFILL ADJACENT TO ROADS, DRIVEWAYS, FOUNDATIONS AND SIDEWALKS, FACILITIES

- A. Within influence area adjacent to or beneath structures, sidewalks, slabs, pavements, curbs, piping, conduits, and other facilities, backfill with Granular Fill material approved by Owner's Representative and/or Engineer.
- B. Place fill in lifts of 6-inch maximum thickness and compact each lift to minimum of 95 percent relative compaction as determined in accordance with ASTM D698.

3.04 SITE TESTING

- A. If test results indicate material does not meet Specification requirements, terminate material placement until corrective measures are taken.
- B. Remove material placed in Work that does not meet Specification requirements.
- C. If compaction testing does not meet Specifications, rework the area and retest until Specifications are met.

3.05 REPLACING OVEREXCAVATED MATERIAL

- A. Replace excavation carried below grade lines shown or established by Owner's Representative with same material as specified for overlying fill or backfill.

END OF SECTION

SECTION 32 91 13
TOPSOIL PREPARATION

PART 1 GENERAL

1.01 GENERAL

- A. This Work includes transportation and installation of topsoil and select topsoil to the project site.
- B. Topsoil is the growth medium for landscape areas and sod.

1.02 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. ASTM International (ASTM):
 - a. D2974, Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils.
 - b. D4253, Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
 - c. D4254, Standard Test Method for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
 - d. D6938, Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods.
 - 2. Illinois Environmental Protection Agency:
 - a. Illinois Administrative Code Title 35, Part 724.
 - b. Tiered Approach to Corrective Action Residential Criteria, Appendix B, Table B.
 - 3. Illinois Department of Transportation (IDOT):
 - a. Manual of Test Procedures for Materials, Illinois Test Procedure 11, Materials Finer than No. 75 μm (No. 200) Sieve in Mineral Aggregates by Washing.
 - b. Illinois Department of Transportation 2012 Standard Specifications for Road and Bridge Construction, Section 211 Topsoil and Compost.
 - 4. AgSource Harris 'Diagnostic Test'
(<http://documents.crinet.com/AgSource-Cooperative-Services/Locations/HarrisSoil-infosheet-v2-Interactive-2014.pdf>).

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1.03 DEFINITIONS

A. Relative Compaction:

1. Ratio, in percent, of as-compacted field dry density (determined in accordance with ASTM D6938) to laboratory maximum dry density as determined in accordance with ASTM D698.
2. Apply corrections for oversize material to either as-compacted field dry density or maximum dry density, as determined by Owner's Representative.

B. Optimum Moisture Content:

1. Determined in accordance with ASTM Standard specified to determine maximum dry density for relative compaction.
2. Determine field moisture content on basis of fraction passing 3/4-inch sieve.

C. Relative Density: Calculated in accordance with ASTM D698 based on maximum index density and minimum index density determined in accordance with ASTM D4253 and ASTM D4254, respectively.

D. Completed Course: A course or layer that is ready for next layer or next phase of Work.

E. Topsoil: Uppermost 5 inches of soil to be placed in areas of sod at residential properties designed to favor sod establishment and growth.

F. Select Topsoil: Uppermost 18 inches (or maximum excavation depth if less than 18 inches) in garden or landscaped areas, designed to favor plant establishment and growth.

G. Subsoil: All soil fill materials below the uppermost layer (topsoil, select topsoil, enhanced drainage material, or gravel) and in accordance with Section 31 23 23, Fill and Backfill.

H. Lift: Loose (uncompacted) layer of material.

I. Imported Material: Materials obtained from sources offsite, suitable for specific use.

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1.04 SUBMITTALS

A. Action Submittals:

1. Contractor will identify topsoil borrow source(s) for approval by Owner's Representative and/or Engineer. A table describing borrow sources and a site drawing will be submitted identifying the location(s) of borrow areas, and of any samples with respect to the specific borrow area at the borrow source. This information will be provided by the Contractor within 5 days from Notice of Award. Owner will review and approve the selected borrow source and all analytical results prior to import of backfill and/or topsoil to the site.
2. Compliance samples as described below in Part 2.01 of this Section will be collected by the Owner's Representative with Contractor assistance for the following testing:
 - a. Chemical analyses of source materials (contaminants).
 - b. Chemical analyses of source materials (basic fertility and salinity).
 - c. Gradation analyses of source materials.
3. Contractor will prepare a soil amendment plan if the AgSource Harris Turf Test results indicate amendment is necessary to support establishment of turf. The plan will including the following:
 - a. Method of amending soil, including equipment and mixing depth (if applicable).
 - b. Selected amendment with the application rate.
 - c. Soil amendment plan will be submitted within 5 work days of receipt of AgSource Harris Turf Test results.

1.05 QUALITY ASSURANCE

A. Notify Owner's Representative when:

1. Subgrade is ready for backfilling or when backfilling operations are resumed after a period of inactivity.
2. Soft or loose subgrade materials are encountered.
3. Topsoil material appears to be deviating from Specifications.

1.06 SEQUENCING AND SCHEDULING

- A. Perform Work specified in Section 31 10 00, Site Preparation; Section 31 23 16, Excavation; and Section 31 23 23, Fill and Backfill prior to performing Work specified under this section.
- B. Complete Work specified in this section within 2 work days of the completion of backfill at a property.

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PART 2 PRODUCTS

2.01 SOURCE QUALITY CONTROL

- A. Source quality control samples will be collected by Owner's Representative with Contractor assistance. The Owner's Representative will submit the samples for the analyses listed in this section. One compliance sample will be collected per 1,000 CY of topsoil (or more often as determined by Owner's Representative and/or Engineer), if variation in material is occurring, or if material appears to depart from Specifications. The Contractor will assist the Owner's Representative with sample collection. The Owner's Representative will submit the samples to the laboratory for testing for the following analyses:
1. Chemical analysis: target compound list (TCL) organics (volatile organic compounds [VOCs] and semi-volatile organic compounds [SVOCs]), TCL pesticides, TCL polychlorinated biphenyls (PCBs), herbicides, and target analyte list (TAL) metals. The topsoil will meet the Illinois Environmental Protection Agency Tiered Approach to Corrective Action (TACO) Residential Criteria (Illinois Administrative Code Title 35, Part 724, Appendix B, Table B).
- B. The Owner's Representative, with Contractor assistance, will collect one sample per 1,000 CY of topsoil for general fertility and salinity analyses using the AgSource Harris 'Diagnostic Test' (<https://www.agsourcelaboratories.com/Portals/11/TURF/Turf%20-%20Soil%20Analysis%20Submission-INT%20FRM-17570-18.pdf>) or equivalent when identifying borrow sources to be used for topsoil. Samples may be collected more often as determined by Owner's Representative and/or Engineer, if variation in fertility and salinity is occurring, or if material appears to depart from Specifications. Samples will be submitted by the Owner's Representative to the laboratory for testing.
- C. The Owner's Representative, with Contractor assistance, will collect one sample per 1,000 CY of topsoil for gradation analysis when identifying borrow source(s) to be used for topsoil. Samples may be collected more often as determined by Owner's Representative and/or Engineer, if variation in gradation is occurring, or if material appears to depart from Specifications. Samples will be submitted by the Owner's Representative to the laboratory for testing.

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2.02 TOPSOIL

- A. Topsoil will be free from objects larger than 1 inch maximum dimension, and free of subsoil, roots, grass, other foreign matter, hazardous or toxic substances, and deleterious material that may be harmful to plant growth or may hinder grading, planting, or maintenance.
- B. Topsoil will consist of humus-bearing soils adapted to the sustenance of plant life.
- C. Topsoil Borrow: Topsoil borrow will range from a silt loam, loam, clay loam, sandy clay loam, or sandy loam soils for general use as a turf growing medium. The Contractor will collect samples with the Owner's Representative, for gradation analysis when identifying borrow source(s) to be used for topsoil. Topsoil will meet the requirements as described below:
 - 1. Material passing No. 4 inch sieve: ≥ 85 percent.
 - 2. Sand: 10 – 75 percent passing No. 10 sieve.
 - 3. Silt: 5 – 70 percent, 0.05 – 0.002 mm diameter.
 - 4. Clay: 5 – 35 percent, less than 0.002 mm diameter.
 - 5. pH: 6.1 – 7.8.
 - 6. Organic matter – 3 to 15 percent of dry weight as determined in accordance with ASTM D2974.
 - 7. Largest materials size dimension not to exceed 2.5 inches.
- D. Select Topsoil Borrow: Select topsoil will consist mostly of a loam ranging into sandy clay loam, sandy loam, silt loam, and clay loam soils, as a plant growing medium for landscape and planting beds. The Contractor will collect samples with the Owner's Representative, for gradation analysis when identifying borrow source(s) to be used for select topsoil. Select topsoil will meet the requirements as described below. Select topsoil may be amended with peat, as needed, to obtain the required organic matter content.
 - 1. Material passing 3/4 inch sieve: 100 percent.
 - 2. Material passing No. 4 inch sieve: ≥ 90 percent.
 - 3. Sand: 15 – 60 percent passing No. 10 sieve.
 - 4. Silt: 10 – 60 percent, 0.05 – 0.002 mm diameter.
 - 5. Clay: 5 – 35 percent, less than 0.002 mm diameter.
 - 6. pH: 6.1 – 7.5.
 - 7. Organic matter – 3 to 15 percent of dry weight as determined in accordance with ASTM D2974.

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2.03 WATER FOR MOISTURE CONDITIONING

- A. Free of hazardous or toxic contaminants, or contaminants deleterious to proper compaction.
- B. The Subcontractor must supply clean water for moisture conditioning. Water may not be used from the residence.

PART 3 EXECUTION

3.01 GENERAL

- A. This work includes transportation and installation of all material to the project site.
- B. Do not use sections of prepared ground surface as haul roads. Protect prepared subgrade from traffic.

3.02 TOPSOIL PLACEMENT

- A. The top 5 inches of soil for backfilled excavation areas will be topsoil with the following exceptions:
 - 1. Garden or landscaping areas shall have a minimum of 18 inches of select topsoil (unless the excavation depth is less than 18 inches, in which case the thickness of topsoil shall be equal to the excavation depth).
- B. Do not place topsoil or select topsoil when frozen, excessively wet, or otherwise detrimental to the Work.
- C. Topsoil and select topsoil will not be placed in standing water or with unstable subgrade conditions. Topsoil and select topsoil will be placed in a manner that does not disturb or damage surrounding structures or utilities.
- D. Topsoil and select topsoil will be placed in lifts no greater than 6-inches.
- E. Topsoil compaction will be minimized to the extent possible in all areas planned for herbaceous vegetation (e.g. lawn). All areas will be tilled with an implement designed to lift and loosen soil to a depth of 3 inches proper to performance of work under Section 32 92 00, Turf and Grasses.
- F. Select topsoil will be lightly compacted with a hand tamper, or Owner's Representative-approved equivalent from 6 inches below ground surface to maximum depth of placement.

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- G. At residential properties, topsoil will be placed in each excavated area to -0.1 foot of final grade if sod is to be placed over the topsoil. Fine grade topsoil eliminating rough or low areas and maintaining levels, profiles, and contours of subgrade.
- H. Remove stones exceeding 1 inch, roots, sticks, debris, and foreign matter during and after topsoil placement.
- I. Remove surplus topsoil from property.

3.03 SITE TESTING

- A. Amend topsoil in accordance with the reported AgSource Harris Turf Test guidelines.
- B. If chemical or gradation test results indicate material does not meet Specification requirements, terminate material placement until corrective measures are taken.
- C. Remove material placed in Work that does not meet Specification requirements.

END OF SECTION

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SECTION 32 91 26
SITE RESTORATION

PART 1 GENERAL

1.01 SUBMITTALS

- A. Action Submittals: Inspection or testing results for existing systems.
- B. Informational Submittals:
 - 1. Manufacturer's Instructions or data sheets for replacement materials.
 - 2. Samples.

1.02 SEQUENCING AND SCHEDULING

- A. The Work of this Specification will not commence until the Owner's Representative and/or Engineer has approved materials and methods proposed for restoration.
- B. Include the Work of this Specification in the progress schedule, as specified in Section 01 32 00, Construction Progress Documentation.
- C. Site restoration will be performed after the completion of activities described in Section 32 91 13, Topsoil Preparation.
- D. Site restoration will be performed after the completion of Survey No. 3 as specified in Section 01 31 13, Project Coordination.

1.03 TESTING

- A. Sprinkler systems, electrical, piping, and plumbing located within or near the limits of excavation will be inspected and tested as appropriate to determine if damage occurred during the remediation.
- B. Testing may include verifying the system is functional or other appropriate means.
- C. Testing will be coordinated with and observed by the Owner's Representative.

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PART 2 PRODUCTS

2.01 REPLACEMENT MATERIALS

- A. Products to match the material and finishes as the item being repaired or replaced.

PART 3 EXECUTION

3.01 GENERAL

- A. Site restoration will include reinstallation of removed obstructions, repairs to permanent structures, and repair or replacement of property disturbed or damaged during or as a result of the Contractor's construction activities.
- B. Site restoration will also include the removal of temporary controls.
- C. Restoration of plant materials is outlined in Section 32 93 00, Plants.

3.02 RESTORATION

- A. The Contractor will reinstall landscaping features or other obstructions removed from the area. Materials will be reinstalled to an equivalent or better condition. Any materials that are damaged and cannot be reinstalled will be replaced with new materials of like-kind with matching finishes as possible.
- B. The Contractor will return items to the property from storage area after reinstallation of removed fencing sections. Any items damaged by the Contractor will be repaired or replaced as directed by Owner's Representative. The condition of equipment and materials prior to removal from the property will be based on photographic and/or video documentation collected during the Initial Preconstruction Meeting as specified in Section 01 31 13, Project Coordination and the Property Inventory Log in the Preconstruction Property Checklist.
- C. The Contractor will reinstall obstructions removed from the staging area. Materials will be reinstalled to an equivalent or better condition. Any materials that are damaged and cannot be reinstalled will be replaced with new materials of like-kind with matching finishes as possible.

3.03 REPAIRS

- A. Residential Property:
 - 1. Damage to private property, including but not limited to, fencing, private utilities, and permanent structures, will be repaired by the

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Contractor in accordance with manufacturer's instructions, local codes and ordinances, and other applicable regulations and as approved by the Owner's Representative.

2. Repairs will be performed to an equivalent or better quality than the original. Repairs shall be made with like-kind materials with matching finishes as possible.
3. Repairs may be performed by the Contractor if qualified, or the Contractor will retain a qualified party to perform the repairs.
4. Damaged items shall be replaced by the Contractor with new undamaged items as approved by Owner's Representative.

B. County, Township, or Village-Owned Property:

1. The Contractor will repair sidewalks, curb and gutter, trees or other County, Township, or Village property damaged by the Subcontractor or as a result of their construction activities. Repairs shall be performed in accordance with the Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction, St. Clair County, Canteen Township, and/or Village of Fairmont City Code of Ordinances, or other applicable ordinances or regulations.
2. Alleyways that will be restored with asphalt and will be constructed in accordance with all applicable sections of IDOT Standard Specifications for Road and Bridge Construction, Division 400, Class A-3 bituminous surface.
3. Repairs will be performed by the Contractor, if qualified, or the Contractor will retain a qualified party to perform the repairs.

C. Staging Area:

1. Damage to property, including but not limited to, fencing, private utilities, and permanent structures, will be repaired by the Contractor in accordance with manufacturer's instructions, local codes and ordinances, and other applicable regulations and as approved by the Owner's Representative.
2. Repairs will be performed to an equivalent or better quality than the original. Repairs will be made with like-kind materials with matching finishes as possible.
3. Repairs may be performed by the Contractor if qualified, or the Contractor will retain a qualified party to perform the repairs.
4. Damaged items will be replaced by the Contractor with new undamaged items as approved by Owner's Representative.

D. Costs to repair or replace damaged items will be borne by the Contractor and not reimbursed by the Owner or Owner's Representative.

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3.04 CLEANUP

- A. Temporary controls will be removed from the residential property after topsoil preparation is complete, sod has been installed, and other property features have been restored.
- B. Stormwater protection and erosion and sediment control measures from the residential property, such as inlet protection, will be removed by the Subcontractor after the final street cleaning is performed in accordance with Section 01 50 00, Temporary Facilities and Controls.
- C. Stormwater protection and erosion and sediment control measures from the staging area, such as silt fencing, will be removed by the Contractor after all punch list items have been addressed, prior to Contractor demobilization.
- D. Debris, rubbish and excess materials will be removed from the property for storage at the staging area or disposal, as appropriate. Local regulations regarding hauling and disposal will apply.
- E. Debris, rubbish, and excess materials shall be removed from the staging area at the FA, as appropriate. Local regulations regarding hauling and disposal will apply.

END OF SECTION

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SECTION 32 92 00
TURF AND GRASSES

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, 2012 Version or current.

1.02 DEFINITIONS

- A. Maintenance Period: The Contractor will begin watering immediately after each property is sodded and continue for a period of four weeks.
- B. Satisfactory Sod Establishment: Lawn that has been growing in place in a live, healthy condition.
- C. Satisfactory Stand on excavated soil staging pile for grass that has:
 - 1. No bare spots larger than 3 square feet.
 - 2. Not more than 30 percent of total area with bare spots larger than 1 square foot.

1.03 SUBMITTALS

- A. Informational Submittals:
 - 1. Product labels/data sheets.
 - 2. Sod bill of lading.
 - 3. Seed: Certification of seed analysis, germination rate, and inoculation:
 - a. Certify that each lot of seed has been tested by a testing laboratory certified in seed testing, within 6 months of date of delivery.
Include with certification:
 - 1) Name and address of laboratory.
 - 2) Date of test.
 - 3) Lot number for each seed specified.
 - 4) Test Results: (i) name, (ii) percentages of purity and of germination, and (iii) weed content for each kind of seed furnished.
 - b. Mixtures: Proportions of each kind of seed.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

4. Daily log of watering activities. Daily log will identify, at a minimum, date, property address and yard areas watered, and gallons applied during the watering.

B. Action Submittals:

1. Sod seed mixture.
2. FA excavated soil staging pile seeding mixture.
3. Certification of sod; include source and harvest date of sod, and sod seed mix.
4. Watering plan and schedule, identifying labor, equipment and materials to be used.

1.04 DELIVERY, STORAGE, AND PROTECTION

- A. Sod: Deliver and lay within 24 hours of harvesting.
- B. Seed: Furnish in standard containers with seed name, lot number, net weight, percentages of purity, germination, and hard seed and maximum weed seed content, clearly marked for each container of seed. Keep dry during storage.
- C. Erosion Control Blanket:
 1. Provide in the original manufacture's unopened containers with labels bearing the manufacturer's guarantee analysis and name. In lieu of containers, the product may be delivered in bulk. A certificate from the manufacturer to supplier indicating the above information will accompany each bulk delivery.
 2. Mark package of wood fiber mulch to show air dry weight.

1.05 WEATHER RESTRICTIONS

- A. Perform Work under favorable weather and soil moisture conditions as determined by accepted local practice.
- B. Sod will not be placed when the ground is frozen or overly saturated.

1.06 SEQUENCING AND SCHEDULING

- A. Prepare topsoil as specified in Section 32 91 13, Topsoil Preparation, before starting Work of this section.
- B. Place sod within 5 calendar days of completion of topsoil and following topsoil surface inspection by the Owner's Representative.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

1.07 MAINTENANCE SERVICE

- A. Furnish and apply water to installed sod areas during maintenance period to establish sod.
 - 1. Watering: Keep surface moist.
 - a. Moist soil looks and feels damp but does not appear wet. Particles of moist soil remain unified and can be formed into a small sphere before crumbling apart.
 - b. At appearances, soil may not appear moist; however, moist soil properties must be exhibited a minimum of one half inch below soil surface throughout maintenance period.
 - c. Soil must not become saturated and plants must not become inundated.
 - d. Prevent sod from exhibiting signs of drought or inundation, such as wilting or discoloration.
 - 2. Replacing sod in unsatisfactory areas or portions thereof at the end of the maintenance period if satisfactory sod establishment has not occurred. Replaced sod will be watered for a 4-week maintenance period.
- B. Contractor will furnish and apply water to excavated soil staging pile seeded areas during maintenance period to establish grasses.
 - 1. Watering: Keep surface moist.
 - a. Moist soil looks and feels damp but does not appear wet. Particles of moist soil remain unified and can be formed into a small sphere before crumbling apart.
 - b. At appearances, soil may not appear moist; however, moist soil properties must be exhibited a minimum of one half inch below soil surface throughout maintenance period.
 - 2. Reseed in unsatisfactory areas or portions thereof at the end of the maintenance period if satisfactory seed establishment has not occurred prior to October 15. After October 15, reseed and cover with erosion control blanket.

PART 2 PRODUCTS

2.01 WATER

- A. Any water used to moisten surface soils or water vegetation must be from a potable source or a source approved by the Contractor.
- B. The Contractor may not use water from the residence.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

2.02 SOD

- A. Sod will be a densely rooted blend of at least two Kentucky bluegrass varieties. The sod will have a minimum 30 percent content that is tolerant of shade and drought conditions. Varieties other than Kentucky bluegrass can be included to meet shade and drought tolerance as necessary (e.g., fine fescues).
- B. Strongly rooted pads, capable of supporting own weight and retaining size and shape when suspended vertically from a firm grasp on upper 10 percent of pad.
 - 1. Grass Height: Maximum of 3 to 4 inches.
 - 2. Strip Size: Uniform units approximately 1.5 by 6 feet; larger rolls can be used if machinery designed for that purpose is used.
 - 3. Soil Thickness: Uniform; minimum 3/4 inch thick at time of cutting.
 - 4. Condition: Healthy, green, moist; free of diseases, nematode and insects, and of undesirable grassy and broadleaf weeds. Yellow sod, or broken pads, or torn and uneven ends will not be accepted.

2.03 SEED

- A. Fresh, clean new-crop seed that complies with the tolerance for purity and germination established by Official Seed Analysts of North America.
- B. Seed mix for disturbed sites and steep slopes that provides erosion control and placed seed will withstand winter and will germinate and grow in subsequent spring.

2.04 EROSION CONTROL BLANKET

- A. Degrades no sooner than 7 months after placement.
- B. Provides erosion control.

2.05 STRAW MULCH

- A. Threshed straw of oats, wheat, barley, or rye, free from (i) seed of noxious weeds or (ii) clean salt hay.

2.06 HYDROSEEDING MULCH

- A. Wood Cellulose Fiber Mulch:
 - 1. Specially processed wood fiber containing no growth or germination inhibiting factors.

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2. Dyed a suitable color to facilitate inspection of material placement.
3. Manufactured such that after addition and agitation in slurry tanks with water, the material fibers will become uniformly suspended to form homogenous slurry.
4. When hydraulically sprayed on ground, material will allow absorption and percolation of moisture.

2.07 TACKIFIER

- A. Derived from natural organic plant sources containing no growth or germination-inhibiting materials.
 1. Capable of hydrating in water, and to readily blend with other slurry materials.
 2. Wood Cellulose Fiber: Add as tracer, at rate of 150 pounds per acre.
 3. Manufacturers and Products:
 - a. Chevron Asphalt Co.; CSS 1.
 - b. Terra; Tack AR.
 - c. J Tack; Reclamare.

PART 3 EXECUTION

3.01 PREPARATION

- A. Grade areas to smooth, even surface with loose, uniformly fine texture.
 1. Residential Areas:
 - a. Just before laying sod, harrow the topsoil a minimum of 3 inches deep with a disk, spring tooth drag, spike tooth drag or other equipment designed to condition the soil. A rake can be used for smaller areas.
 - b. Prepare the earth bed with water to moisten the soil as necessary before laying the sod.
 - c. Limit such Work to areas to be planted immediately.
 - d. Remove debris, and stones larger than 1-1/2-inch diameter, and other objects that may interfere with planting and maintenance operations.
 2. FA Excavated Soil Staging Pile:
 - a. Prior to seeding, cover staging pile with approximately 4 inches of topsoil. Topsoil is specified in Section 32 91 13, Topsoil.
 - b. Grade areas to smooth, even surface with loose, uniformly fine texture.

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- c. Moisten prepared areas before planting if soil is dry. Water thoroughly and allow surface to dry off before seeding. Do not create muddy soil. Do not create erosion of topsoil.
- d. Restore prepared areas to specified condition if eroded or otherwise disturbed after preparation and before planting.
- e. Seed stockpile every 60 days, at a minimum. Water as needed to establish and maintain satisfactory stand.

3.02 SODDING

- A. Place sod within 5 days of topsoil preparation completion.
- B. Do not plant sod when ground is frozen.
- C. Lay sod within 24 hours after cutting and properly protect until placed.
- D. Do not handle sod with pitch forks nor dump from vehicles.
- E. Lay sod to form solid mass with tightly fitted joints; butt ends and sides and do not overlap.
 - 1. Stagger strips to offset joints in adjacent courses.
 - 2. Work from boards to avoid damage to subgrade or sod.
 - 3. Tamp or roll lightly to ensure contact with subgrade; work sifted soil into minor cracks between pieces of sod, remove excess to avoid smothering adjacent grass.
 - 4. Complete sod surface true to finished grade, even and firm.
- F. Fasten sod on slopes to prevent slippage with wooden pins 6 inches long driven through sod into subgrade, until flush with top of sod. Install at sufficiently close intervals to securely hold sod.
- G. Sod which has been allowed to dry out at any time will be rejected.
- H. Sod will not be placed under conifers unless otherwise directed by Owner's Representative. Mulch will be placed under conifers as specified in Section 32 93 00, Plants.

3.03 SEEDING

- A. Start within 2 days of preparation completion.

SURROUNDING PROPERTIES REMEDIAL DESIGN
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- B. Hydroseed slopes steeper than 3H:1V. Flatter slopes may be mechanically seeded.
 - 1. Hydroseeding:
 - a. Hydraulic seeding shall be performed with equipment manufactured for that purpose and normally used commercially in the area
 - b. Seed will be applied prior to the application of the hydroseeding mulch and tackifier to improve seed-soil contact.
 - c. Application Rate: 200 pounds per acre.
 - d. Apply on moist soil, only after free surface water has drained away.
 - e. Prevent drift and displacement of mixture into other areas.
 - f. Upon application, allow absorption and percolation of moisture into ground.
 - g. All planting equipment, including inside of hydroseeding tank, shall be free of foreign matter including seed, fertilizer, mulch, or other material. All equipment shall be pressure-washed by the Contractor and then checked by the Contractor prior to use.
 - h. Fertilizer may be applied with the mulch and tackifier if desired and if approved by the seed supplier.
 - i. Mixtures: Seed and fertilizer may be mixed together, apply within 30 minutes of mixing to prevent fertilizer from burning seed.
- C. Mulching: Apply uniform cover of straw mulch at a rate of 2 tons per acre on flatter slopes. Apply wood fiber mulch at rate of 1,500 pounds per acre for slopes greater than 3H:1V. Tackifier: Apply over mulched areas with slopes steeper than 3H:1V at rate of 5 gallons per 1,000 square feet.
- D. Place straw on moist topsoil on soil staging pile over seed placed on or after October 15 only after free surface water has drained away.

3.04 FIELD QUALITY CONTROL

- A. At the end of the four week Maintenance Period watering, Owner's Representative and Contractor will inspect the sodded and grassed areas.
 - 1. At the direction of Owner's Representative, any defective or unacceptable sod shall be removed, replaced and watered for 4 weeks by the Contractor at the Contractor's expense. Payment will be made for acceptable sod. Property Owner will assume responsibility for further maintenance watering after Owner Representative's acceptance at the end of the maintenance period(s).

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2. At the direction of Owner's Representative, if a satisfactory stand has not been established on excavated soil staging pile, Contractor will re-seed and water at Contractor's expense. Payment will be made for satisfactory stand.

END OF SECTION

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

SECTION 32 93 00
PLANTS

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Association of Nurserymen (AAN): Z60.1, Nursery Stock.
2. Hortus Third, Liberty Hyde Bailey, Hortorium, 1976.

1.02 DEFINITIONS

A. Measurement:

1. For Trees: In size grading Balled and Burlapped (B & B), caliper takes precedence over height.
2. For Trees: Measure trunk diameter at breast height (DBH), which is 4 feet above ground.
3. For Trees and Shrubs: For multi-stem or evergreen trees, measure size of container-grown stock by overall height. For shrubs, measure size of container-grown stock by height and spread.
4. For Perennials and Grasses: Measure herbaceous perennials pot size, not top growth. Roots should not consume more than 50 percent of the root ball.

1.03 SUBMITTALS

A. Action Submittals:

1. Pre-Selected Plant materials source list: Contractor will develop and submit a list of trees, shrubs and perennials that are readily available at local nurseries and appropriate for the region with the recommended available sizes.
2. Product data on manufactured products specified.

B. Informational Submittals:

1. Maintenance Data: Instructions for storage, planting, fertilizing, care, and maintenance of each type of plant for 1-year period in climate and location of the Project.

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1.04 DELIVERY, STORAGE, AND HANDLING

- A. Cover plants during shipment with a tarpaulin or other suitable covering to minimize drying or ship in box van.
- B. B & B Plant material: Wrap each ball firmly with burlap and securely bind with twine, cord, or wire for shipment and handling. Drum-lace balls with a diameter of 30 inches or more.
- C. As specified herein for transplanting.

1.05 SPECIAL WARRANTY

- A. Replace defective trees, shrubs, and perennials with new material free of dead or dying branches and branch tips, and bearing foliage of a normal density, size, and color. Closely match new tree, shrub, and perennial in growth and form to adjacent specimens of the same species and meet requirements of this Specification. Plant material that appears chlorotic (yellowing or browning of leaves), shows evidence of disease, wilt, or has lost a minimum of 25 percent of its leaves during the normal growing season are considered defective.
- B. Plants damaged or lost due to vandalism by others are not subject to this special warranty.

1.06 MAINTENANCE

- A. Begin maintaining newly installed material immediately after planting and maintain for the period specified for "Maintenance Period" in Section 32 92 00, Turf and Grasses.
- B. In accordance with accepted Submittal on care and maintenance of plants and as follows:
 - 1. Maintain by watering, pruning, cultivating, and weeding as required for healthy growth.
 - 2. Tighten and repair stake and guy supports and reset trees and shrubs to proper grades or vertical position, if required.
 - 3. Maintenance and fertilizer requirements as specified in Informational Submittal.
 - 4. Maintenance includes temporary protection fences, barriers, and signs as required for protection. Protection fences and barriers shall not be moved or shifted until they are removed at Substantial Completion.
 - 5. Coordinate watering to provide deep root watering to newly installed trees.

SURROUNDING PROPERTIES REMEDIAL DESIGN
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- C. Replace plants exhibiting signs of drought or inundation, such as wilting or discoloration at the end of the 4-week maintenance period. Contractor will water and maintain replaced plants for a 4-week maintenance period, until Owner Representative's acceptance is obtained.

1.07 SCHEDULING AND SEQUENCING

- A. Planting Season:
 - 1. Spring Planting: March 30 to June 1.
 - 2. Fall Planting: August 30 to November 30.
- B. Plant trees, shrubs, and perennials after final topsoil grades are established and before placement of sod.
- C. Sod installation shall commence within one day after tree, shrub, and perennial material installation.

PART 2 PRODUCTS

2.01 PLANT MATERIALS

- A. Provide quantity, size, genus, species, and variety of trees and shrubs indicated; comply with applicable requirements of AAN Z60.1.
- B. Nomenclature (Names of Plants): In accordance with "Hortus Third".
- C. Quality and Size:
 - 1. Nursery-grown, habit of growth normal for species.
 - 2. Sound, healthy, vigorous, and free from insects, diseases, and injuries.
 - a. Single Stem Trees shall have one strong central leader. Canopy shall be uniform and healthy in shape, typical of species and shall not be limbed up or pruned to reach desired form. Bark shall be uniform and not show signs of injury.
 - b. Multi-Stem Trees shall be uniform in shape and form. Branching habit shall be typical for the species and bark shall be uniform without signs of injury.
 - c. Shrubs shall be uniform in shape and form for the species. Bark shall not show signs of injury.
 - d. All plant material shall not be root bound in containers. Roots shall not consist of more than 50 percent of root ball in the container.
 - e. All plant material shall not have girdled roots.

SURROUNDING PROPERTIES REMEDIAL DESIGN
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3. Equal to or exceeding measurements specified in plant list. Measure plants before pruning with branches in normal position.
 4. Root System of Container-Grown Plants: Well developed and well distributed throughout the container, such that the roots visibly extend to the inside face of the growing container.
 5. Perform necessary pruning at time of planting.
 6. Sizes: Dimensional relationship requirements of AAN Z60.1 for kind and type of plants required.
 7. Balled and Burlapped Plants: Firm, intact ball of earth encompassing enough of the fibrous and feeding root system to enable full plant recovery.
 - a. Ball Size: AAN Z60.1.
 8. Container-Grown Plants: Self-established root systems, sufficient to hold earth together after removal from container, without being root bound.
 - a. Stock: Grown in delivery containers for at least 6 months but not over 2 years.
 9. Label tree and shrub of each variety with securely attached waterproof tag bearing legible designation of botanical and common name.
- D. Replacement Trees, Shrubs, and Perennials: Same species and quantity as specified for plant being replaced except:
1. Species that are at risk due to current or anticipated diseases or infestations in the foreseeable future (i.e., Dutch Elm disease or Emerald Ash tree borer).
 2. Replace existing trees larger than 4-inch caliper with 4-inch caliper trees.
 3. Replace existing trees smaller than 4-inch caliper with 2-inch caliper.
 4. Exotic species not readily available at local nurseries will be managed on property-specific basis with the property owner.

2.02 ANTIDESICCANT

- A. Provide transpiration retarding material to be used where any plant material is moved during the growing season.
- B. Products (or approved equivalent):
1. Foliguard®.
 2. Wiltpruf®.

SURROUNDING PROPERTIES REMEDIAL DESIGN
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2.03 STAKING, AND WRAPPING MATERIALS

- A. Wood Stake: 2 inches by 2 inches by 8 feet.
- B. Guy Wires: Galvanized, 12-gauge, ductile steel.
- C. Hose: Two-ply, reinforced rubber garden hose, not less than 1/2-inch diameter, new or used.
- D. Tree Ties: No. 4 chain lock tree ties.
- E. Wrapping Material: Heavy crepe paper.
 - 1. Burlap of first quality, minimum 8 ounces in weight, not less than 6 inches nor more than 10 inches in width.

2.04 MULCH

- A. Recycled hardwood (chipped or shredded), free from noxious weed seed and foreign material harmful to plant growth.
- B. Chipped or shredded trees from the site cannot be used as mulch.
- C. Depth: 3 inches.

2.05 ROCK MULCH

- A. Inorganic mulch such as lava rock, river rock, quartz, limestone or other material to match the mulch at the property prior to construction.
- B. Depth: 3 inches.

2.06 PEAT MOSS

- A. Composition: Natural residue formed by decomposition of reeds, sedges, or mosses in a freshwater environment, free from lumps, roots, and stones.
 - 1. Organic Matter: Not less than 90 percent on a dry weight basis.
- B. Moisture Content: Maximum 65 percent by weight at time of delivery.

2.07 HERBICIDE

- A. Selective, pre-emergent, surface-applied at manufacturer's recommended rate.

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B. Products (or approved equivalent):

1. Surflan.
2. Casoron.

2.08 PLANTING SOIL MIX

- A. Proportion by Weight: 3/4 approved Topsoil with 1/4 approved organic matter (peat moss).

2.09 FERTILIZER

- A. Commercial, complete, of neutral character; in granular, packet, or pellet form, 35 to 80 percent of nitrogen slow release.
1. Minimum: 10 percent available nitrogen, 3 percent to 5 percent phosphoric acid, and 3 percent to 5 percent soluble potash.
- B. Organic fertilizer when requested by property owner and as directed by the Owner's Representative.

PART 3 EXECUTION

3.01 LOCATION OF PLANTS

- A. Locate new planting in same location as removed plant or otherwise directed by Owner's Representative to address Property Owner concerns.
- B. Locate no planting, except ground cover, closer than 18 inches to pavements, pedestrian pathways, and 36 inches to structures unless replacing plant that was previously located there.
- C. Request Owner's Representative observe locations and adjust as necessary before planting begins if alternate plant locations were requested by the Property Owner.
- D. Planting of trees and shrubs shall be as specified herein and shown on Standard Details:
1. 3293-612, Small Tree Planting.
 2. 3293-614, Tree Planting on Slope.
 3. 3293-630, Shrub Planting from Container.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

E. Ground Cover Beds:

1. Mix amendments and fertilizer with top soil prior to placing or apply on surface of top soil and mix thoroughly before planting.
2. Scarify top soil to a depth of 4 to 6 inches.
3. Establish finish grading of soil. Rake areas to smooth and create uniform texture and fill depressions.
4. Moisten.

3.02 PREPARATION

A. Planting Soil: Delay mixing of amendments and fertilizer if planting will not follow preparation of planting soil within 2 days. Do not mix or amend when soils are saturated or frozen. For pit and trench type backfill, mix planting soil prior to backfilling and stockpile at Site.

B. Trees, Shrubs, and Perennials:

1. Pits, Beds, and Trenches: Excavate with vertical and scarified sides.
2. B & B Trees and Shrubs: Make excavations at least twice as wide as root ball.
3. Container-Grown Stock: Excavate as specified for B & B stock, adjusted for size of container width and depth.
4. Bare-Root Trees: Excavate pits to a width to just accommodate roots fully extended and depth to allow uppermost roots to be just below original grade.
5. Fill excavations with water and allow to percolate out prior to planting.

3.03 PLANTING

- A. Plant trees before planting surrounding smaller plants. Adjust plants with most desirable side facing toward the prominent view (sidewalk, building, street).
- B. B & B Plants: Place in pit by lifting and carrying by its ball (do not lift by branches or trunk). Lower into pit. Set straight and in pit center with tip of rootball 1 to 2 inches above adjacent finish grade.
- C. Bare-Root Plants: Spread roots and set stock on cushion of planting soil mixture. Set straight in the pit center so that roots, when fully extended, will not touch walls of the planting pit and the uppermost root is just below finish grade. Cover roots of bare-root plants to the crown.
- D. Container-Grown Plants: Remove containers, slash edges of rootballs from top to bottom at least 1-inch deep. Plant as for B & B plants.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

- E. Ground Covers: Dig planting holes with one of the following: hand trowel, shovel, bulb planter, or hoe. Split biodegradable pots or remove non-biodegradable pots. Root systems of all potted plants shall be split or crumbled. Plant so roots are surrounded by soil. Set potted plants so pot top is even with existing grade.
- F. Transplants: The Property Owner may have removed existing plants prior to excavation and removal by the Contractor. The Property Owner is solely responsible for the planting and care of transplanted plants.

3.04 BACKFILLING

- A. Backfill with planting soil mix as specified in Article 2.08.
- B. B & B Plants:
 - 1. Partially backfill pit to support plant. Remove burlap and binding from sides and tops of B & B plants. Do not pull burlap from under balls.
 - 2. When excavation is approximately 2/3 full, water thoroughly before placing remainder of backfill to eliminate air pockets even if it is raining. Finish backfilling pit sides.
 - 3. Never cover top of rootball with soil. Rootball shall be installed with top of root ball at or 1-inch above finish grade.
- C. Bare-Root Plants:
 - 1. Plumb before backfilling and maintain plumb while working backfill around roots and placing layers above roots.
 - 2. Set original soil line of plant 1 inch to 2 inches above adjacent finish landscape grades. Spread out roots without tangling or turning up to surface. Cut injured roots cleanly; do not break.
 - 3. Carefully work backfill around roots by hand; puddle with water until backfill layers are completely saturated.

3.05 STAKING, AND WRAPPING

- A. Support trees that cannot stand alone, immediately after planting to maintain plumb position.
- B. Staking: Support deciduous trees 2 inches in caliper or less with stakes spaced equally about each tree.

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

3.06 FERTILIZER

- A. Add as top dressing depending on plant size and manufacturer's recommendation.

3.07 MULCHING

- A. Cover planting beds around each plant with a 3-inch depth layer of selected mulch within 2 days after planting. Saturate planting area with water. Mulch shall not cover root flare and shall not be installed within 2-3 inches of root flare.
- B. Wood mulch will be used except where rock mulch was present prior to construction. Rock mulch may be either existing mulch removed during site preparation or new mulch consistent in appearance.
- C. Place a 3-inch layer of mulch under the drip zone of conifers that remained within the excavation area after restoring to grade with topsoil.

3.08 WEED CONTROL

- A. Maintain a weed-free condition within planting areas during maintenance period. Apply pre-emergent selective herbicide to mulched beds at manufacturer's recommended rate of application.

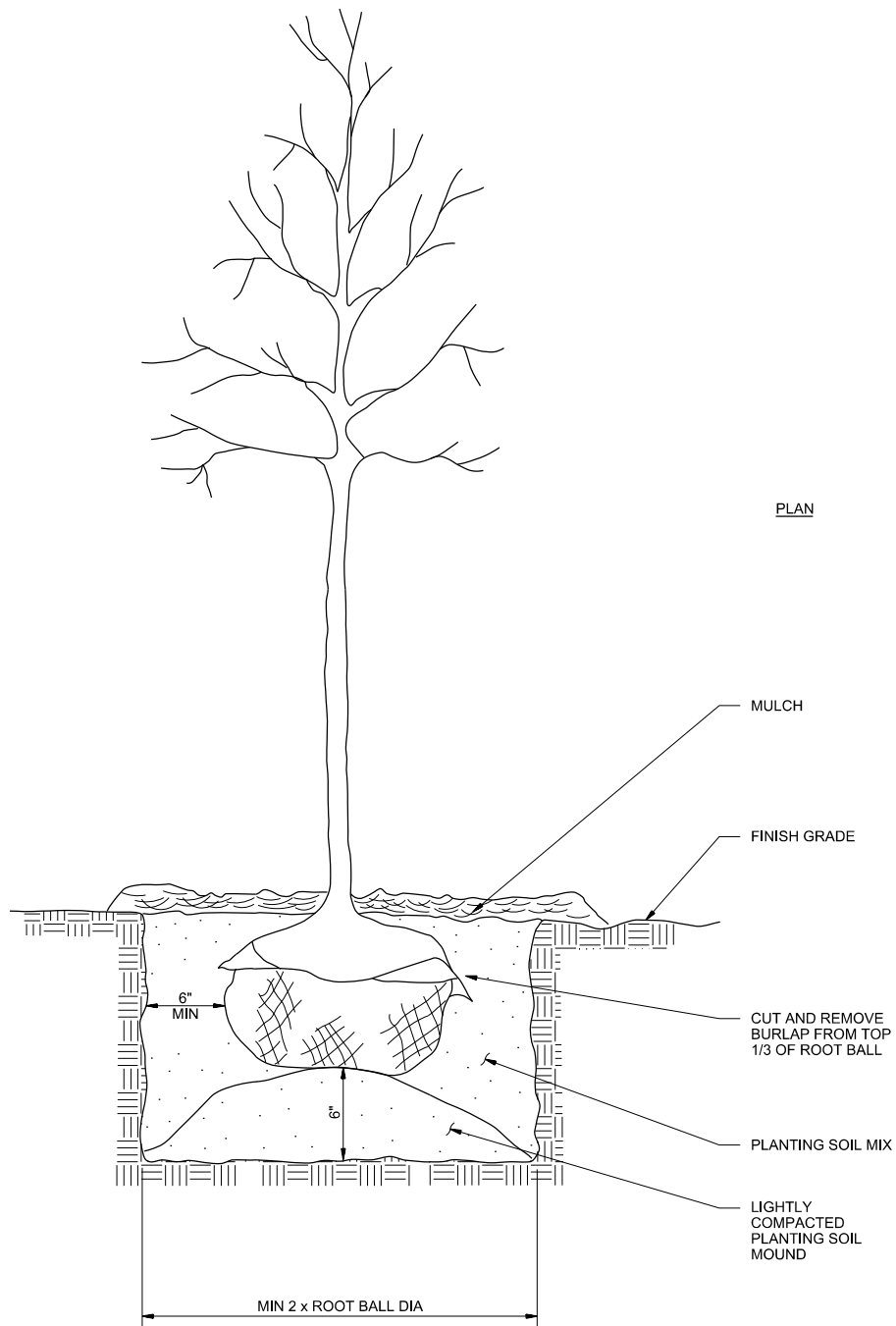
3.09 SUPPLEMENT

- A. The supplements listed below, following "End of Section," are a part of this Specification:
 - 1. Template: Plant Listing.
 - 2. Standard Detail 3293-612, Small Tree Planting.
 - 3. Standard Detail 3293-614, Tree Planting on Slope.
 - 4. Standard Detail 3293-630, Shrub Planting from Container.

END OF SECTION

SURROUNDING PROPERTIES REMEDIAL DESIGN
OLD AMERICAN ZINC PLANT SUPERFUND SITE

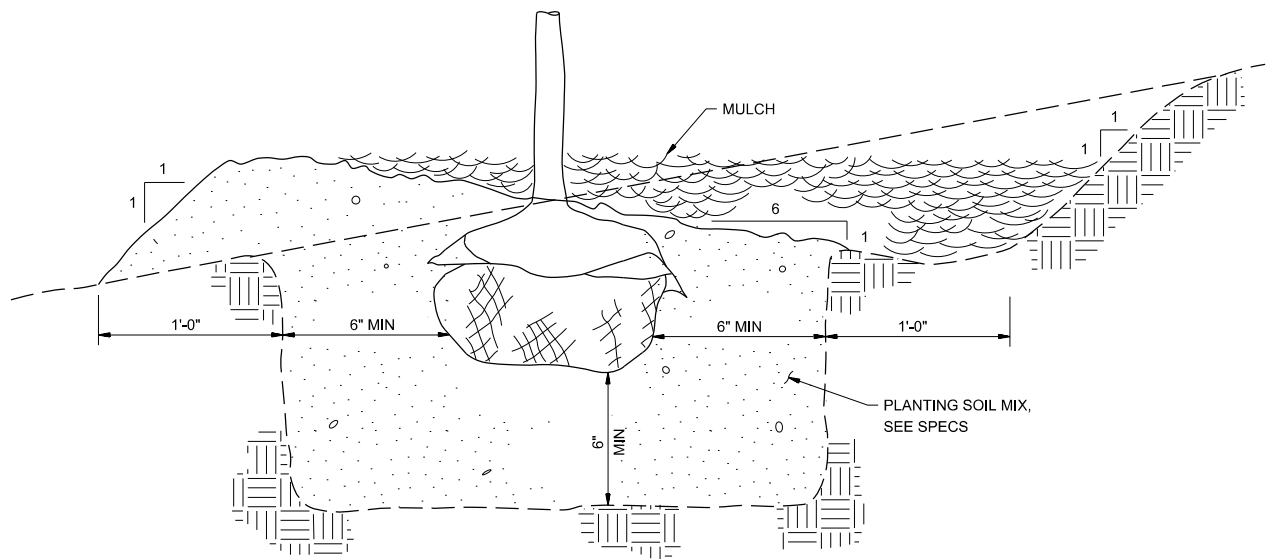
Plant Listing				
Quantity	Size	Genus	Species	Variety



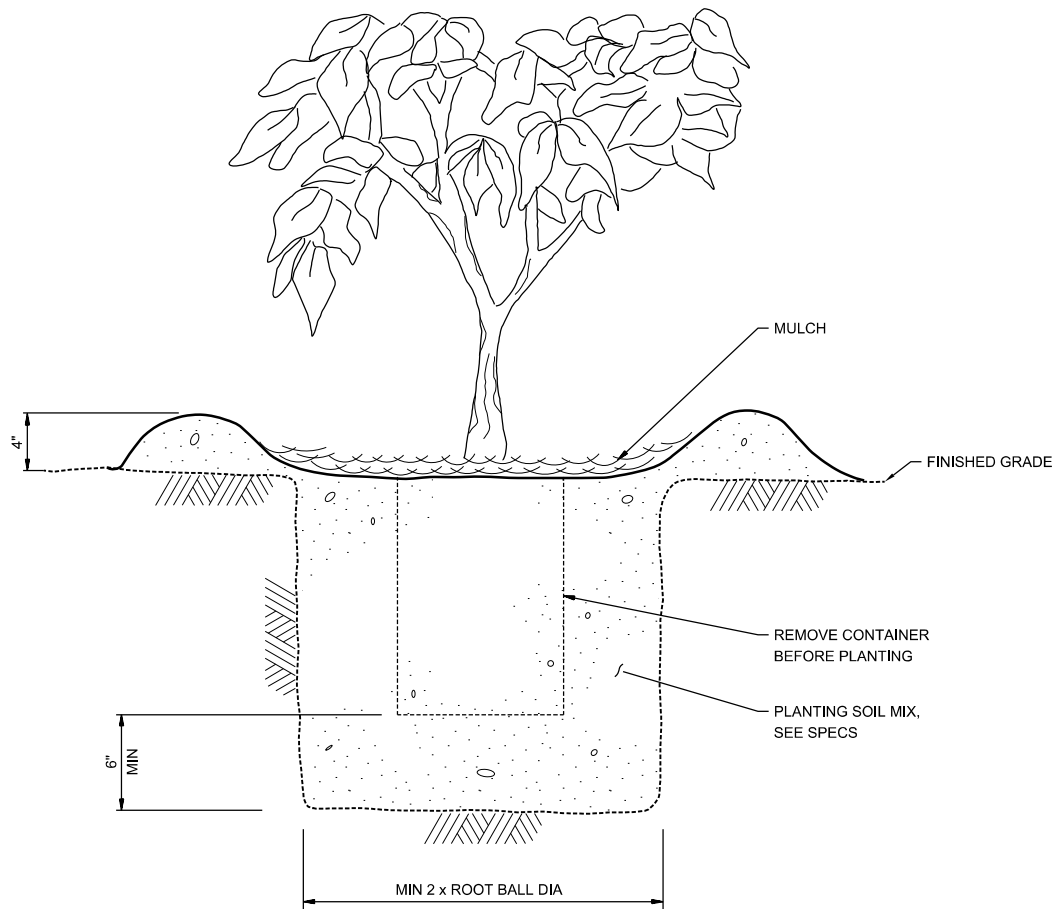
NOTE:

TREE SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE TO PREVIOUS GRADE.

DETAIL 3293-612
SMALL TREE PLANTING
 OLD AMERICAN ZINC SUPERFUND SITE
 PREFINAL DESIGN SUBMITTAL MAY 2018
 REVISION - 0



DETAIL 3293-614
TREE PLANTING ON SLOPE
 OLD AMERICAN ZINC SUPERFUND SITE
 PREFINAL DESIGN SUBMITTAL MAY 2018
 REVISION - 0



DETAIL 3293-630 SHRUB PLANTING FROM CONTAINER

OLD AMERICAN ZINC SUPERFUND SITE
PREFINAL DESIGN SUBMITTAL MAY 2018
REVISION - 0

Appendix C

Construction Quality Assurance Plan

CONSTRUCTION QUALITY ASSURANCE PLAN

Old American Zinc Plant Superfund Site

Fairmont City, St. Clair County, Illinois
Surrounding Properties Remedial Design
WA No. 224-RDRD-B5A1/Contract No. EP-S5-06-01

Prepared for



May 2018

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Acronyms and Abbreviations

3POC	Three Phases of Control
AHA	activity hazard analysis
CM	construction manager
CQAP	construction quality assurance plan
CQM	construction quality manager
DFOW	definable feature of work
EM	environmental manager
EPA	U.S. Environmental Protection Agency
ERC	Emergency Response Coordinator
FA	Facility Area
FS	feasibility study
HASP	health and safety plan
HSM	health and safety manager
HSSE	health, safety, security, and environment
mg/kg	milligrams per kilogram
mg/m ³	milligrams per cubic meter
OAZ	Old American Zinc
ORR	Operational Readiness Review
OSHA	Occupational Safety and Health Administration
PCG	preliminary cleanup goal
PM	project manager
PRP	potentially responsible party
QA	quality assurance
QC	quality control
RA	remedial action
RD	remedial design
RFI	request for information
RHSM	responsible health and safety manager
RI	remedial investigation
ROD	Record of Decision
SM	site manager
SSC	site safety coordinator
TBD	to be determined
WAM	work assignment manager
XTRA	XTRA Intermodal, Inc.

Introduction

The purpose of the construction quality assurance plan (CQAP) is to provide the quality processes and procedures for work conducted around the facility area (FA) of the Old American Zinc (OAZ) Plant Superfund Site in St. Clair County, Illinois. This CQAP specifically addresses remedial action (RA) construction activities aimed at the removal of soil at a minimum of 75 properties and 10 alleys in accordance with Work Assignment No. 224-RDRD-B5A1, under Contract No. EP-S5-06-01, as directed by the U.S. Environmental Protection Agency (EPA). The CQAP includes processes and procedures for the following activities:

- Observing construction and restoration activities
- Sampling and testing protocol
- Complying with substantive requirements of permits
- Documenting that construction and restoration have been completed in general accordance with the plans and specifications and with quality assurance (QA) procedures outlined in this plan

1.1 Site Description

The OAZ Plant Superfund Site, is located in the Village of Fairmont City in St. Clair County, Illinois (Figure 1-1). The site includes a 132-acre FA and surrounding properties where elevated metal concentrations associated with the facility operation were found in different media. The FA is bordered by several commercial and industrial properties, including Garcia Trucking to the west, CSX Intermodal railroad yard to the south, and General Chemicals to the east.

1.2 Site History

OAZ conducted zinc-smelting operations at the site from 1916 to 1967. Slag from the smelting operation was cooled by placing the molten material along the northern and western boundary of the FA. The slag stockpiles originally encompassed an area of 15 acres. The site, including the clinker and other smelting residues on the property, was purchased by XTRA Intermodal, Inc. (XTRA), in 1979. XTRA operated a trucking terminal at the site until 2003 that included lease, storage, and maintenance of a diverse fleet of trailers. XTRA ground and redistributed the slag stockpiles on the FA to buildup and level the former plant site to facilitate its trucking operation. At present, redistributed slag on the FA cover an area of 125 acres with thickness ranging from 6 inches to 9 feet (ENTACT 2012).

Site investigations conducted at the site since 1994 detail the nature and extent of contamination in the FA and surrounding properties. ENTACT completed a remedial investigation (RI) and feasibility study (FS) for the site in 2012 and identified contaminants in different media that included slag stock piles, ground slag that was used as fill material, and high metal concentrations in shallow groundwater in the FA. The impacted surrounding areas include residential, commercial, and vacant properties and village alleyways and drainageways that were contaminated with runoff from the facility. Ground slag was also transported to offsite properties by local businesses, residents, and the Village for surfacing village alleyways and used as fill material in residential properties (ENTACT 2012). Most of the impacted properties are located to the west of the site, with small pockets of trailer park and residential developments to the north, south, and east.

EPA, under the provisions of Comprehensive Environmental Response, Compensation, and Liability Act, conducted a Time-Critical Removal Action from 2002 to 2003. A total of 462 offsite properties was sampled during the Time-Critical Removal Action, of which 209 properties were found to have lead concentrations above the Remedial Action Level of 400 parts per million. Impacted soil was removed

from 152 properties, with the remaining properties to be addressed under future RA. Following the completion of the RI/FS in 2012, a Record of Decision (ROD) was issued by EPA detailing the selected remedial approach for the site. EPA entered into an Administrative Order on Consent with the potentially responsible party (PRP) in August 2014 to perform the remedial design (RD) work. The PRP was tasked with performing the RD work, and a draft final RD report (consisting of the report, selected drawings, but no technical specifications) was submitted to EPA in April 2016. In April 2016, the PRP filed for Chapter 11 bankruptcy and ceased performing additional work at the site. As a result, EPA took control of the site to complete the RD.

1.3 Project Goals and Objectives

EPA's selected remedy for the site is Alternative 4A, as described in the ROD (EPA 2012). The overall strategy for the site is to contain and cover the low-level-threat waste to reduce future human health and ecological risk to acceptable levels.

The selected remedy for the off-FA properties involves removal of source material (slag used as fill) and contaminated soil from the identified residential, commercial/industrial, vacant properties, or village alleyways above the applicable residential or commercial/industrial human health cleanup levels. The properties will be backfilled with imported fill that meets project specifications and restored to pre-excavation conditions. During the RA, excavated soil from the surrounding properties and alleyways will be stockpiled at the FA. The removed material will eventually be consolidated within a 35-acre consolidation area located in the southwest portion of the FA, as part of the future remedy at the FA.

Soil removal and stockpiling will be performed as follows:

- Soils from residential, commercial/industrial, or vacant properties and village alleyways will be removed up to a maximum depth of 24 inches. If concentrations exceeding the cleanup levels remain at 24 inches depth, a demarcation barrier will be placed at the base of the excavation before backfilling and restoration.
- The excavated material will be transported and stockpiled at the FA, for future placement within a constructed consolidation area that will be capped with a cover system consisting of a 24-inch low-permeability clay barrier, overlain by a 12-inch vegetative soil cover. In the interim, the excavated staging pile will be vegetated for stabilization until remediation of the FA occurs.

Residential cleanup levels for arsenic, cadmium, lead, and zinc were developed assuming unrestricted future use. Cleanup levels developed during the RI/FS (ENTACT 2008, ENTACT 2009a, ENTACT 2009b) were evaluated, and the lower of the calculated noncancer preliminary cleanup goal (PCG) and the calculated cancer PCG for each of the three target risk levels (10^{-4} , 10^{-5} and 10^{-6}) was selected as summarized in the ROD (EPA 2012).

An exception was made for arsenic, where the noncancer PCG of 32 mg/kg was selected, which is based on a hazard index of 1. The selected PCG is lower than the cancer PCG based on the 10^{-4} target cancer risk level (35 mg/kg). The cancer PCGs based on 10^{-5} (3.5 mg/kg) and 10^{-6} (0.35 mg/kg) were lower than Illinois background (13 mg/kg), and EPA does not generally require cleanup below background levels. Table 1-1 shows the final cleanup levels for residential and nonresidential properties

Table 1-1. Final Cleanup Levels

Old American Zinc Superfund Site Surrounding Properties

Contaminant of Concern	Residential (mg/kg)	Non-Residential (mg/kg)
Arsenic	32	239
Cadmium	37	809
Lead	400	826
Zinc	6,400	306,600

The overall quality control (QC) objective is to implement the final design and provide documentation that support achieving the testing, submittal, inspection, and the systems' performance requirements, in such a manner that all work performed adheres to the following objectives:

- Complies with federal, state, and local regulations
- Protects human health and the environment
- Provides the client with a usable product intended to meet the project objectives (described above)
- Is cost-effective

1.4 Scope of Work

Roles during the RA will be defined as follows:

- Owner: EPA, Region 5.
- Engineer: CH2M.
- Property Owner: Property owner of individual property within the Surrounding Property Residential Area.
- Tenant: Person(s) residing at the property, if different from Property Owner.
- Owner's Representative: construction management firm, or United States Army Corps of Engineers, which the EPA has contracted to complete the RA.
- RA Contractor (contractor): Responsible for completing work described in the contract documents, and management of all subcontractors.
- Subcontractor: A subcontractor retained by the contractor.

This CQAP describes the construction process, as well as the quality management process activities that will be implemented at the site during the construction activities. When this document references the owner's representative, it should be construed to mean the owner's representative and its contractors as their respective trade may apply to the subject being discussed. The following are major components of the construction activities:

- Mobilization
 - Mobilizing equipment, personnel, site trailers, and sanitary facilities.
 - Installing erosion controls and best management practices.
 - Clearing and grubbing of vegetation and implementation of erosion control measures in the disturbed areas on the FA, as required.
 - Setting up a site trailer and utility connections for the contractor and any subcontractors
 - Constructing temporary roads, stockpile, and laydown areas at the FA
 - Establishing traffic controls and routes
 - Conducting photographic documentation of preconstruction conditions of the site
 - Notifying the appropriate regulatory agencies
- Site Preparation
 - Performing preconstruction property visits (initial preconstruction meeting and second preconstruction meeting) with property owners
 - Performing utility locates using both the one-call utility location system (JULIE) and a third-party utility-locating service for each property.

- Conducting preconstruction surveys
- Clearing, grubbing, tree, shrub, and fence removal at properties, where necessary.
- Excavation, Transportation, and Disposal
 - Excavation of soil to the excavation depths indicated on the property drawings
 - Post-excavation surveys
 - Personnel and perimeter air monitoring
 - Management of water that accumulates in excavations
 - Transportation of excavated soil to the FA for stockpiling at the soil staging pile
 - Disposal of yard debris, decontamination water, and other containerized liquids for offsite disposal
- Management of soil staging pile at the FA
 - Seeding every 30 days, followed by a 4-week watering period
- Backfilling and compaction
 - Placement of demarcation fabric for 24-inch excavations
 - Backfilling properties with general backfill and topsoil
 - Backfilling the alleyways with general backfill and gravel
 - Backfilling gardens and landscape areas with select topsoil
 - Compaction testing
 - Post-backfilling survey
- Restoration
 - Concrete and asphalt repair
 - Erosion repairs
 - Street cleaning
 - Restoring disturbed areas on the FA.
- Landscaping and maintenance
 - Tree, shrub, and perennial replacement
 - Sod placement
 - Wood mulch and rock mulch replacement
 - 4-week maintenance period for each property
- Post-construction property review
- Demobilization
 - Removal of all field equipment, temporary facilities, and other miscellaneous items upon completion of fieldwork and punch list items
 - Final acceptance

1.5 Critical Success Factors

The following are the critical success factors for the project:

- Implement site improvements that effectively and efficiently meet project objectives and integrate safety, environmental compliance, and cost sensitivity into the design and construction.
- Complete all work safely, on time, under budget, and in compliance with the specified scope.
- Identify and document value-added opportunities.
- Identify and document health, safety, quality, and environment lessons learned.
- Communicate effectively among owner's representative's project team members and with EPA.
- Follow the procedures set forth in this CQAP to ensure work is delivered with zero quality incidents.

Organization and Responsibilities

Responsibilities and authority are described in the following subsections.

2.1 Responsibilities

2.1.1 EPA—Superfund

EPA is responsible for the overall execution of the project. EPA will retain independent design, QA, and construction organizations to accomplish the work, and will have the authority to hire and fire these organizations. EPA has the authority to accept or reject QA plans, reports, and recommendations of EPA's representative, and the materials and workmanship of contractors. Sheila Desai is the EPA work assignment manager (WAM) for the RA.

2.1.2 Owner's Representative

The owner's representative will manage the tasks required to complete the RA work assignment and to oversee the activities of the contractors assisting with those tasks. The engineer will assist with RA tasks, as directed by the EPA, to support RA activities. Table 2-1 outlines the assumed owner representative's construction team organizational structure for construction activities. However, the owner representative's actual organizational structure may differ, and will be determined once selected by the EPA.

Table 2-1. Remedial Action Project Personnel
Old American Zinc Superfund Site Surrounding Properties

Job Title	Roles and Responsibilities
Site Manager	<ul style="list-style-type: none"> Ensures project direction and goals align with the site wide strategy. Directs contact with EPA and external stakeholders. Serves as the main interface between the project team and EPA. Represents the project team at meetings. Reviews deliverables prior to client submittal.
Project Manager	<ul style="list-style-type: none"> Meets overall project objectives and goals. Acquires and applies technical and corporate resources to meet budget and schedule constraints. Effectively charters the construction team. Primary point of contact to the site manager. Responsible for the oversight and management of construction activities. Performs RA submittal reviews. Oversees the preparation of the deliverables. Reviews the work performed on each task against project goals and objectives for quality, responsiveness, and timeliness. Overall responsibility for project controls. Identifies and realizes remediation value-added opportunities. Conducts weekly progress meetings and weekly quantity verification meetings, and prepares and distributes meeting notes discussing progress problem areas, and status of long-lead items.
Assistant Project Manager	<ul style="list-style-type: none"> Assists project manager (PM) in meeting overall project objectives and goals. Acquires and applies technical and corporate resources to meet budget and schedule constraints.

Table 2-1. Remedial Action Project Personnel

Old American Zinc Superfund Site Surrounding Properties

Job Title	Roles and Responsibilities
	<ul style="list-style-type: none"> • Primary point of contact to the PM. • Assists PM with the oversight and management of construction activities. • Oversees the preparation of the deliverables. • Performs RA submittal reviews. • Reviews noncompliance notices submitted by the field quality manager and determines an appropriate action. • Identifies and realizes remediation value-added opportunities.
Construction Quality Manager	<ul style="list-style-type: none"> • Performs inspections and surveillance of project activities as necessary to ensure the quality of service, product, and workmanship meet the requirements of the project. • Ensures quality planning elements are implemented as required in this CQAP. • Ensures daily reports meet project requirements and correctly implement the document control/management process. • Completes daily QA/QC verification forms. • Ensures all delivered materials are inspected. • Verifies corrective actions are taken when deemed appropriate. • Participates in quality audit. • Ensures required field forms and logs are completed. • Advises the PM of site conditions or construction conditions that may affect the accomplishment or quality of work. • Reviews results of contractor submitted quality control tests for compliance with contract requirements. • Conducts air monitoring in accordance with the health and safety plan (HASP) and air monitoring plan.
Program Quality Assurance Manager	<ul style="list-style-type: none"> • Ensures implementation of the EPA quality program. • Performs or delegates construction audits and inspections. • Participates in Operational Readiness Review meeting. • Performs RA submittal reviews. • Participates in quality audit.
Responsible Health and Safety Manager	<ul style="list-style-type: none"> • Responsible for overall health and safety needs, including audits, clearing staff to work, and developing safety plans. • Reviews pre-qualifications for contractors. • Performs RA submittal reviews. • Reviews/approves contractor activity hazard analyses (AHA) and site-specific health and safety plans prior to beginning fieldwork. • Ensures the HASP is followed by all site employees.
Contract Manager	<ul style="list-style-type: none"> • Ensures project complies with internal business group contracting policies. • Negotiates contracts and issues purchase orders to contractors. • Provides guidance to contractor change orders. • Closes contracts at the end of the project.
Environmental Manager	<ul style="list-style-type: none"> • Ensures compliance with state and federal permitting requirements. • Performs RA submittal reviews.
Waste Management Specialist	<ul style="list-style-type: none"> • Ensures waste management complies with local, state, and federal laws. • Ensures compliance with state and federal permitting requirements.
Construction Manager	<ul style="list-style-type: none"> • Manages all construction activities in the field. • Anticipates, understands, and implements proactive management solutions as construction work packages are assembled, procured, and awarded. • Describes, quantifies, documents, and communicates change management items.

Table 2-1. Remedial Action Project Personnel*Old American Zinc Superfund Site Surrounding Properties*

Job Title	Roles and Responsibilities
	<ul style="list-style-type: none"> • Allocates construction resources. • Reviews and manages construction scope, schedule, and budget. • Updates the project schedule for all construction tasks and identifies potential scheduling conflicts or schedule creep. • Reviews contractor's technical and cost proposals related to construction submittals. • Interprets the technical content of drawings with respect to deviations or requests for clarification. • Reviews contract modifications and forward modifications to the PM for approval. • Performs inspection and surveillance of field activities as necessary to ensure the quality of service, product, and workmanship meets project objectives, describes, quantifies, documents, and communicates potential change management items as soon as they are anticipated as potential issues. • Notifies the PM if a project cannot be completed with regard to quality, schedule, or cost. • Coordinates project activities to achieve conformance with construction specifications. • Submits nonconformance reports and other QA documents to the project QC manager. • Documents the resolution of inadequacies noted in nonconformance reports. • Establishes location, time, and sampling criteria for verification testing to be performed by field staff. • Reviews results of contractor-submitted QC tests for compliance with contract requirements. • Advises the PM/construction of conditions that may affect satisfactory completion and quality of the work. • Confirms that QA and support personnel are adequately trained. • Performs inspection and surveillance of field activities, as necessary to ensure that the quality of service, product, and workmanship meet project requirements. • Reviews contractor's monthly payment requests and forwards the requests to the PM for approval. • Provides the PM with a detailed weekly construction status report, containing photographs and weekly logs.
Site Safety Coordinator	<ul style="list-style-type: none"> • Supervises the direct and daily activities of the field team to coordinate with the daily activities of the contractor. • Reviews daily inspection reports for completeness. • Tracks all onsite project personnel hours. • Collaborates with the health and safety manager (HSM) to maintain the HASP. • Provides project-specific information to the HSM needed to determine personal protective equipment selection. • Ensures owner's representative's staff are chartered on the HASP and other required health, environment, and safety documents. • Ensures contractors have submitted required AHAs to the HSM for review and have received acceptance for AHAs prior to mobilization. • Establishes site control and appropriate decontamination processes for personnel and equipment. • Ensures safety supplies and equipment required by the HASP are onsite, calibrated as appropriate, and in good working condition before initiating work in the field. • Ensures all feasible controls and safe work practices are considered before returning personal protective equipment. • Ensures good housekeeping at field locations.

Table 2-1. Remedial Action Project Personnel

Old American Zinc Superfund Site Surrounding Properties

Job Title	Roles and Responsibilities
	<ul style="list-style-type: none"> • Completes all forms necessary and specified in the HASP and ensures documents are submitted for review prior to being filed in the project binder. • Conducts air monitoring, enforces HASP action levels, maintains calibration records, and records air monitoring results. • Verifies proper utility clearances prior to breaking ground. • Acts as the project's emergency response coordinator and performs pre-emergency planning tasks as outlined in the HASP before starting field activities. • Notifies PM and HSM of all near-misses, injuries and incidents immediately. Complete an Incident Report Form within 24 hours of an incident. Provide additional or updated information to the HSM after submitting the initial incident report. Collaborate on incident investigations • Verifies project files include safety-related training and medical monitoring records, and site-specific safety procedures prior to beginning any contractor's field operations. Performs oversight and/or assessments of the contractor health and safety practices in accordance with the HASP. • Implements any noise conservation program requirements and hearing protection requirements. • Prepares and conducts site orientation sessions for field personnel. • Collects contractor timesheets and quantity verification sheets during daily safety briefings and updates tracking tools.
Document Manager	<ul style="list-style-type: none"> • Implements the document control processes. • Implements the document management processes. • Archives documents and records.
Engineer (CH2M)	<ul style="list-style-type: none"> • Meets overall project objectives and goals. • Provides guidance during construction, as directed by EPA. • Manages design efforts. • Provides design guidance during construction, as directed by EPA. • Performs technical submittal reviews, as directed by EPA.

Multiple field technical staff will be employed during the execution of this project due to the planned operation schedule, which will generally be limited to 7:00 a.m. to 6:00 p.m. Monday through Friday, for an estimated 7-month construction period. Fewer field staff may be employed during the final 4-week maintenance period.

2.1.3 Contractors

The contractors are responsible to perform work in accordance with the design plans and specifications, meeting the acceptance requirements detailed in the design. It is assumed that construction components (including, but not limited to, earthwork, transportation, staging excavated soil at the FA, surveying, landscaping, watering residential properties, and seeding and watering the excavated soil stockpile at the FA) will be performed under a single contract (hereafter referred to as contractor). An analytical laboratory services contract will be required for QC samples for borrow sources and liquid waste characterization. Although the primary contractor may choose to subcontract portions of the project, in this document "contractor" will refer to the primary contractor. The contractor will work under the oversight of the Construction Manager (CM). The contractor will be responsible for construction QC requirements, as appropriate.

The contractors are responsible for certifying that the products supplied conform to the plans and specifications. The individual contractors are collectively referred to as contractors within this CQAP.

2.1.4 Vendors, Independent Test Companies, and Subcontractors

Vendors, independent test companies, and subcontractors are agents of the respective contractor by way of subcontracts, sub-subcontracts, or similar arrangements. As such, they are responsible, through the contractor, for maintaining QC procedures in accordance with their contractual arrangements and the contractor's QC plans. The agents should also provide the contractor with QC data and reports necessary for the agent's submittals to the PM. The following subcontractors may be used for this project:

- Borrow source provider of topsoil, general backfill, gravel, and other borrow materials as necessary
- Utility-locating service(s)
- Surveying services
- Transportation and disposal services
- Landscaping/site restoration

Quality Control Processes

Section 3 defines the reporting and documentation requirements that will be implemented during construction activities to ensure QC of the work.

3.1 Construction Quality Management

An inspection system referred to as the Three Phases of Control (3POC) will be implemented as a contractor construction quality management process. The 3POC is a three-step inspection process that includes the Preparatory Phase, Initial Phase, and Follow-up Phase inspections. The process is designed to discuss the project requirements prior to initiating any construction work activities, assess the quality of work early in the execution of work, and monitor the work throughout the delivery until completion. The 3POC process is intended to enhance management of construction quality and formalize documentation of the quality administrators for each definable feature of work (DFOW) for the project. A DFOW is a task that is separate and distinct from other tasks and has separate control requirements. The 3POC process will be implemented for each of the following RA DFOWs:

- Utility Locating (DFOW 1)
- Mobilization and Site Preparation (DFOW 2)
 - Equipment delivery and facilities construction
 - Preconstruction property visit
 - Excavation limits
 - Preconstruction surveys
 - Protection of property
 - Utility locating
 - Stormwater pollution prevention plan implementation
 - Clearing, grubbing and tree, shrub, and fence removal
- Property Remediation (DFOW 3)
 - Soil excavation
 - Fugitive dust and noise restrictions
 - Backfilling
- Surveying (DFOW 4)
 - Post-excavation
 - Post-backfill
- Sampling/Testing (DFOW 5)
 - Air monitoring
 - Borrow source sampling and testing
 - Waste characterization (if needed)
 - Soil compaction testing
- Waste Management (DFOW 6)
 - Transportation
 - Staging pile at FA
 - Disposal Site Restoration (DFOW 7)
 - Landscaping (tree, shrub, perennial replacement at residential properties)
 - Sod installation and watering at residential properties

- Fence replacement
- Soil cover, seeding, and watering staging pile at FA
- Watering
- Demobilization (DFOW 8)

The respective inspection phases are discussed in the following subsections.

3.1.1 Preparatory Phase

The preparatory phase is the step in delivering the project that essentially culminates the planning and design process leading up to actual fieldwork of a specific residential property. It also serves to assure that the project delivery, QC, and safety plans have been completed and are ready to be implemented. The following events take place during the preparatory phase for each DFOW established by the CM:

1. Confirm that the appropriate technical specifications are incorporated into the project work plans and construction drawings, and review specifications with the CM and other field team members.
2. Confirm that the appropriate contract drawings are incorporated into the project work plan, and review drawings with the CM and other field team members.
3. Verify with the construction quality manager (CQM) that all shop drawings and preconstruction submittals (materials, health and safety, project plans) have been approved by the proper approving authority (including factory test results, when required).
4. Confirm with the CM and CQM that the testing plan coincides with the project plans and that adequate testing is called for to assure quality delivery.
5. Confirm definition of preliminary work required at the work site, and examine the work area with the CM.
6. CM to confirm required preliminary work has been properly completed.
7. Confirm that waste profiles are properly completed, transporters are approved, and disposal facility acceptances and approvals are in place.
8. Confirm availability of required materials and equipment. Confirm with CQM and CM that materials and equipment inspected and CQM to confirm compliance with approved submittals.
9. Confirm with the HSM that the site HASP and AHAs have been reviewed and approved to verify that safety concerns are adequately addressed and applicable safety requirements have been incorporated into the plan. Confirm that the appropriate safety data sheets have been identified and properly submitted.

Discuss with the CM the construction methods to be employed during the RA. Confirm that all field team members are aware of the identified checkpoints and areas of evaluation that will allow determination that the appropriate quality of construction is being achieved. All observations will be recorded in the Preparatory Phase Report (Attachment A, Form A.1).

3.1.2 Initial Phase

The initial phase occurs at the startup of remedial activities, or construction, associated with a specific DFOW. Essentially, the initial phase confirms that the CQAP is being effectively implemented and the desired results are being achieved. With the initial phase, it is required to notify the CQM that the crews are ready to start a particular DFOW prior to their actual start.

Specific details associated with the initial phase are as follows:

1. Establish the quality of workmanship required to properly deliver the DFOW in accordance with project requirements. The CQM assures that the CM has made the contractor aware of expectations associated with the construction methods established under the preparatory phase. This assurance is to be achieved through observation of the initial work activities, as well as through interaction with the CM.
2. Resolve conflicts. The CQM will provide support to the CM in resolving conflicts involving quality issues. Should conflicts arise in establishing the baseline quality for the DFOW, the responsibility to resolve the conflict falls to the CQM. Should the conflict not be resolved in a manner that satisfies the contract requirements, the CQM will elevate the conflict to the PM. Should the issue jeopardize the results of the DFOW, or put the project at risk of noncompliant performance, the PM or CQM may direct a cessation of work activity.
3. Evaluate the site HASP and AHAs against actual work conditions with the CM to assure that the hazard analysis conducted to prepare the safety plan adequately addressed field conditions. Confirm applicable safety requirements are being implemented during construction activities.
4. Observe and evaluate the performance of testing technicians. Confirm with the CQM that testing is being performed in accordance with the testing plan and that required protocols are being observed. Review reports and documentation associated with extraction, packaging, transporting, and testing of samples. Note discrepancies and direct correction accordingly.

Upon completion of the initial phase activities, results are to be documented in the initial phase checklist (Attachment A, Form A.2).

3.1.3 Follow-up Phase

Completion of the initial phase of QC activity leads directly into the follow-up phase, which addresses the routine day-to-day activities on the project site. Inspection activities associated with each DFOW are to be addressed within the daily report. Specific concerns associated with the follow-up phase include the following:

1. Inspection of the work activity to assure work complies with the contracted project tasks.
2. Evaluation and confirmation that the quality of workmanship is being maintained at a level no less than that established during the initial phase.
3. Evaluation and confirmation that required testing and surveying are being performed in accordance with procedures established during the preparatory phase and confirmed during the initial phase.

Confirmation that nonconforming work is being corrected promptly (within 24 hours) and in accordance with the direction provided by the CM.

Project Communications and Meetings

Section 4 discusses project communications and meetings.

4.1 Lines of Communication

Accurate and timely communication is required to avoid construction-related conflicts and potential errors and omissions.

4.1.1 External Communications

EPA, the engineer, the owner's representative, contractors, and their respective employees and staff will have an established communication network. Establishing open lines of communication is essential for maintaining strong working relationships and producing quality work. The following communication guidelines should be adhered to throughout the project:

- The site manager (SM) should be the primary contact with the EPA's WAM.
- In-person questions (if they occur) from the EPA WAM should be answered honestly and directly, but without speculation. If the answer is not known, tell the EPA WAM that you do not know, that you will find the answer, and that someone will quickly respond. Contact the SM and PM immediately to update them on the conversation and unanswered questions.
- All stakeholder phone conversations must be documented. A copy of the phone call record should be routed to the PM, CM, and any other project team members who could be affected.
- The SM or PM will coordinate all formal client meetings. The owner's representative will prepare and distribute minutes of all meetings within 5 days.

The SM and PM must review all EPA correspondence before it is sent. Table 4-1 lists the key elements of the communication plan for construction.

Table 4-1. Summary of Communications and Meetings
Old American Zinc Superfund Site Surrounding Properties

Type of Communication	Channel of Communication	Schedule
Communication with external stakeholders	Routine and as-needed call by SM and PM with EPA.	To be determined (TBD)
Prebid Meeting	EPA, SM, PM, engineer (if directed by EPA), CM, contractors, and any subcontractors should be present.	TBD
Construction Charters	Charter construction team	TBD
Preconstruction meeting	PM, CM, SM, contractors, and any subcontractors should be present.	TBD
Coordination Meeting/Preconstruction Client Meeting	Meeting to discuss construction activities. EPA, stakeholders, PM, CM/site safety coordinator (SSC)/construction quality manager (CQM), contractors, and any subcontractors should be present.	TBD
Operational Readiness Review (ORR)	Checklist to prepare for mobilization	TBD

Table 4-1. Summary of Communications and Meetings
Old American Zinc Superfund Site Surrounding Properties

Type of Communication	Channel of Communication	Schedule
Project status meetings	Discuss construction activity progress and status. PM, CM/SSC/CQM, SM, and the contractors should be present.	TBD
Problem or work deficiency meetings	A special meeting may be held if a problem or deficiency is present or likely to occur. PM, CM, SM, QCM, CQM, and HSM, the affected contractor, and subcontractor(s) involved in the problem or deficiency.	TBD
Field-level communication channel	Contractor to CM. CM to PM/SM. PM/SM will continue the communication chain as needed.	TBD

Project-specific personnel and lines of communication will be discussed and established by all parties at the preconstruction meeting. The discussion will include the following topics:

- Communication procedures between supervisory and field staff.
- Direct communication procedures between key parties for specific issues and situations.
- Procedures and restrictions for secondary lines of communication within the project organization.
- Procedures for information transfer and confirmation between the various parties.
- Procedures for documentation of all communications.
- Format for meetings, reports, submittals, etc.

Communication will be documented with each party receiving a copy of such documentation (for example, telephone memorandums, meeting notes). Copies will be routed to other parties that should be informed of the situation (for example, problem, change, or agreement).

Document control procedures will be established for items such as contractor submittals, test results, and plan or specification revisions. The controls will include distribution and confirmation procedures to verify that documents are appropriately dispatched and incorporated into the project. Whenever possible, documents indicating revisions in plans, specifications, or procedures will be distributed immediately and explained to all parties at routine or special project meetings.

4.1.2 Internal Communications

The CM will communicate daily with the PM, and the PM will communicate with the SM. The SM will communicate with extended team members. All construction issues will be communicated through the CM and PM. The parties will discuss and establish the project-specific personnel and lines of communication at the kickoff meeting. The discussion will include the following:

- Communication procedures between the CM and other field staff
- Direct communication procedures between key parties for specific issues and situations
- Procedures and restrictions for secondary lines of communication within the project organization
- Procedures for information transfer and confirmation between the various parties
- Procedures for documentation of communications
- Format for meetings, reports, submittals, etc.
- Format for potential change(s) that may require quantification and management

Formal communication, including, but not limited to, weekly progress meetings, discussions with stakeholders, and discussion with contractors that affect scope, schedule, or budget will be documented, and each party will receive a copy of such documentation (e.g., telephone memorandums,

meeting notes). Copies will be routed to other parties if they should be aware of the situation (e.g., problem, change, or agreement).

Document control procedures will be established for items such as contractor submittals, test results, and plan or specification revisions. All contractor submittals will be entered into the submittal register by the CQM upon receipt of the deliverable. At the time of entry, the CQM will document who needs to perform a detailed review of the document and notify the appropriate team members. Team members will document the completion of their reviews by indicating the approval status (e.g., approved or rejected) in the log with the date the review was completed. These controls will include distribution and confirmation procedures to verify documents are appropriately dispatched and incorporated into the project. Whenever possible, documents indicating revisions in plans, specifications, or procedures will be distributed immediately and explained at routine or special project meetings.

4.2 Project Meetings

Project meetings will be scheduled to promote communication between various personnel responsible for designing, constructing, managing, and observing the construction. The purpose of the routine project meetings is to keep all project staff members informed and to provide a forum for solving design, construction, and QA issues.

4.2.1 Prebid Meeting

A prebid meeting will be held to provide a forum for prequalified bidders to discuss the contract documents. At a minimum, the owner's representative's PM, CM, and EPA should be present to meet with interested bidders. Any specific questions that are brought up will be answered in the form of an addendum to the contract documents.

4.2.2 Contractor Health, Safety, Security, and Environment Chartering Meeting

Prior to mobilization, all contractors and subcontractors who will be physically mobilizing to the site are required to attend a health, safety, security, and environment (HSSE) chartering meeting with key owner's representative's personnel (PM, HSM, CQM, and CM). The purpose of the meeting is to discuss and agree on key HSSE requirements on the project and to emphasize and reinforce the owner's representative's expectations for HSSE performance. The meeting may be held over the phone or in person, depending on project needs.

4.2.3 Preconstruction Meeting

A preconstruction meeting will be held to identify project personnel, review the project, and schedule, clarify, or resolve outstanding issues before construction startup. At a minimum, EPA, the owner's representative's PM, CQM, and CM, the contractors, and selected subcontractors should be present. The PM, CQM, and CM will be prepared to discuss the following subjects, at a minimum:

- Required schedules
- Status of bonds and insurance
- Sequencing of critical path work items
- Progress payment procedures
- Project changes and clarification procedures
- Use of site, access, office and storage areas, security, and temporary facilities
- Contractor's HASP and representative
- Status of permits, license, or required approvals
- Status of submittals
- Maintenance of required records

- Activity hazard analysis
- Contractor's key personnel information and points of contact
- Contractor's QA/QC plan

The following will be performed by the CM and CQM during the preconstruction meeting:

- Provide each party with relevant construction and QA documents and supporting information. Supporting information may include construction drawings, specifications, and other applicable documents. The information transfer is not limited to documents distributed by the CM and CQM. All parties should use the opportunity to distribute relevant documents.
- Familiarize each party with his or her specific responsibilities relative to the design criteria, construction drawings, schedules, and specifications.
- Discuss the purpose of the CQAP and the documentation structure provided by the CQAP to verify that the project will be executed efficiently and in compliance with the specified design criteria and schedule.
- Review the responsibilities of each party.
- Review lines of authority and communication for each party.
- Discuss the established procedures and protocol for observations and tests, including sampling strategies.
- Discuss the established procedures and protocol for handling construction deficiencies, repairs, and retesting.
- Discuss the established procedures and protocol for handling contract modifications such as change orders and field orders.
- Review methods for documenting and reporting inspections and test data.
- Review work area security and safety protocols.
- Discuss procedures for locating and protecting construction materials and preventing damage to the materials from inclement weather or other events.
- Conduct a site walk to review construction material and equipment storage locations.
- Discuss payment for work in-place, including method of payment and unit cost work.

The preconstruction meeting will be documented by the CQM, and minutes will be provided to all parties.

4.2.4 Coordination Meeting/Preconstruction Client Meeting

Prior to the start of site work, the project team will meet with EPA and stakeholders to develop a mutual understanding of the project details, including health and safety issues, communication procedures, evacuation/emergency procedures, scheduling work, security procedures, submittal reviewer/approvers, inspectors/approvers of major milestones of work performed, permits required, forms to be used, administration of onsite and offsite work, signature authorities for changes and waste documentation, schedule, and method for transmitting submittals. Minutes of the meeting will be prepared by the PM and signed by the owner's representative's personnel, EPA's designated delegate(s), and the stakeholders (fire marshal, representatives of local police, utilities, and health services, etc.). Meeting minutes will be distributed to the parties involved in the meeting and placed in the project files. The meeting may be held in conjunction with other meetings (for example, the preconstruction meeting).

4.2.5 Operational Readiness Review Meeting

Prior to the start of site work, the owner's representative's PM will complete an ORR checklist. The project team will discuss the checklist over a conference call, and any noted deficiencies will be addressed prior to the start of work. Specifically, the ORR checklist covers the owner's representative's general requirements prior to the start of work, equipment and supplies necessary to complete the work, contractor requirements, sampling requirements, construction procedures, waste management procedures and requirements, and environmental permits. The final, approved ORR checklist will be saved in the project folder.

4.2.6 Project Status Meetings

After the start of site work and throughout project execution, the project team will conduct project status meetings (sometimes referred to as quality meetings) at least weekly. EPA's representative(s) and stakeholders may attend any of the meetings. At a minimum, the following will be accomplished at each meeting:

1. Review the minutes of the previous meeting.
2. Review the schedule:
 - a. Work or testing accomplished since last meeting
 - b. Rework items identified since last meeting
 - c. Rework items completed since last meeting
 - d. Schedule delays and long lead time items
 - e. Critical milestones
 - f. Updated schedule of values
3. Review the status of submittals
 - a. Submittals reviewed and approved since last meeting
 - b. Request for information resolutions
 - c. Submittals required in the near future
4. Review the work to be accomplished in the next 2 weeks and documentation required:
 - a. Completion dates for rework items
 - b. Inspections required
 - c. Testing required
 - d. Status of offsite work or testing
 - e. Documentation required
5. Discuss health and safety issues, such as near misses and incidents.
6. Resolve quality issues such as nonconformance, rework, or corrective actions.
7. Resolve production problems.
8. Address items that may require revising the CQAP or other project plans:
 - a. Changes in procedures
 - b. Changes in design/engineering drawings and/or specifications
 - c. Changes or claims for additional compensation or time

Meetings will be recorded in project status meeting minutes, prepared by the CQM. The meetings may be held in conjunction with other meetings (such as tailgate safety meetings, progress meetings, planning meetings, etc.). Meeting minutes will be sent to all personnel attending the meeting.

4.2.7 Problem or Work Deficiency Meetings

A special meeting may be held if a problem or deficiency is present or likely to occur. The meeting should at least be attended by the owner's representative's CM and/or CQM, the contractor, and subcontractors involved in the problem or deficiency. The purpose of the meeting is to define and resolve a problem or recurring work deficiency in the following manner:

- Define and discuss the problem or deficiency.
- Review alternative solutions.
- Implement a plan to resolve the problem or deficiency.

The meetings will be documented by the CM, CQM, or a designated representative. Copies of the meeting minutes will be sent to all personnel attending the meeting, the PM, SM, and EPA, if not present.

4.3 Public Relations Plan

The CM may be approached by the general public during construction activities due to the proximity of the work zone to a public road. If contact occurs, the CM/SSC should direct the individual(s) to contact the EPA primary public affairs contact for the site. The CM/SSC may tell the individual(s) that EPA- and Illinois EPA-approved corrective measures construction activities are being conducted; however, no additional project information may be shared. Once the individual(s) has left the work zone, the CM/SSC shall contact the SM/PM and document the exchange in the field notes and daily report.

Primary Contact: Sheila Desai/U.S. Environmental Protection Agency – Project Manager, 312-353-4150, desai.sheila@epa.gov

4.4 Regulatory Inspections

If a local, state, or federal regulatory inspector makes an unannounced visit to the project site, the CM shall be familiar with and follow the owner's representative's protocol for agency inspections.

Document Control and Management

Section 5 discusses document control and management.

5.1 General

The document manager for the project is responsible for implementing the procedures described in this section. A document control and management process will be implemented so that current and correct documents are available where the work is performed and that project records are archived after the work has been completed. Obsolete copies will be appropriately marked and/or removed from the work site and destroyed. The document manager is also responsible for providing backup of field files to the central project files as required by these procedures. Hard copies of the specifications, property drawings, HASP, and signed AHAs will be kept on file at the owner's representative's trailer. Hard copies will include change order or RFI resolution attachments.

The document manager will be responsible to check that project personnel, contractors, subcontractors, and customers use the correct version of project documents. In general, the document manager must receive all documents transmitted, either directly or copied in communications from other project team members.

5.2 Document Transmittals

Document transmittals between the project parties provide a record of communications that is necessary to keep appropriate construction and QA personnel informed of project requirements, progress, changes, and quality of the work. Transmittals should be formally communicated with proper documentation and confirmation of submittal and receipt to prevent misunderstandings and omissions.

5.2.1 Contract Clarification/Interpretation Requests

Contract clarification/interpretation requests and requests for information (Attachment A, Form A.3) are submitted when an explanation of the intent of specific project requirements, as presented in the contract documents, is required, which are generally submitted by the contractor to the document manager; however, the CM can submit clarification/interpretation requests to the contractor and should include the document manager on communications.

Contract clarification/interpretation requests shall be managed by the document manager. Interpretations of design or specifications by the design team will be issued in writing. In special cases, the engineer may communicate a design interpretation or clarification verbally, followed by written confirmation. Responses to contract clarification/interpretation requests will be obtained in a timely manner to limit the impact on the project schedule. The PM is responsible for informing all parties of the design team's interpretations by distribution of documents to construction and QA personnel through the document manager, or by copying the document manager on communications, at a minimum.

5.2.2 Contract Modification Requests

A contract modification request is made if a change to the contract documents is deemed necessary for the following reasons:

- Changed site conditions
- Changed materials conditions
- Alternative design procedures proposed

- Alternative materials proposed

Contract modification requests (Attachment A, Form A.4 [273]) are generally prepared in response to a contract clarification/interpretation request submitted by the contractor or the document manager that has an effect on the contract scope, schedule, or budget. Contract modification requests should be submitted to the document manager for coordination with the appropriate groups. The appropriate groups will review, negotiate, and finalize all contract modification requests and forward modifications to the PM for approval. The CM or CQM will prepare contract modifications (change orders) as necessary, including the document manager on communications for submittal to the contract administrator. Responses to contract modification requests will be obtained in a timely manner to limit the impact on the construction schedule. The CM is responsible for transmitting all contract modifications to the appropriate organizations, before the change becomes part of the project record.

Likewise, the CM or CQM may issue a field order (Attachment A, Form A.5 [275]) for clarification and interpretation of drawings in cases where a contract modification is not suitable, including the document manager on communications. For example, a field order may be issued in response to a contractor-initiated contract clarification/interpretation request when the clarification does not affect the design intent, schedule, or cost of the work.

5.2.3 Contractor Submittals

Construction QC submittals are those submittals generated by the contractor during or immediately before construction to demonstrate compliance with the project plans. Submittal requirements for these projects are tabulated in the submittal register (Attachment B), in accordance with the requirements identified in the project plans.

The CQM, with support from the PM, will log and track all submittals on the submittal register. The following are specific responsibilities regarding submittals:

- Coordinating all submittal actions.
- Maintaining necessary submittal records in an organized manner.
- Maintaining and tracking submittals in the submittal register.
- Reviewing and certifying all submittals for compliance with the project plans, drawings, and specifications.
- Approving all submittals, except those designated to be approved by the design manager, EPA, and/or stakeholders.
- Checking all material and equipment delivered to the project for compliance with the project plans, drawings, and specifications.

Certain designated technical or other submittals require approval by authorities other than the CQM, HSM, or PM. In such cases, the CQM will forward the submittal to the appropriate approver as specified in the Submittal Register.

The PM is responsible for coordinating the submittal transmittal and approval process and for ensuring that the process does not affect the project schedule.

5.2.3.1 Technical Submittals

The contract documents require that the contractor submit various technical submittals. The submittals are outlined by their respective phase of work and as presented in the Submittal Register (Attachment B). Documents shall be submitted with a transmittal log (Attachment A, Form A.6 [295]) to

the document manager according to the frequency and number specified in the contract documents. Subcontractor and vendor submittals shall be made through the contractor.

As submittals are received, the CQM will document their receipt in the Submittal Register. The CQM will assign the submittal to appropriate project team members for detailed review using the project SharePoint site. Reviewers will check the submittal for general compliance with the contract documents and will note missing information or deviations in the submittal review form (Attachment A, Form A.7). The CM and/or PM will oversee the review process and help resolve questions regarding compliance with contract documents.

Review comments on submittals will clearly state information the reviewer considers to be lacking. Notes must be documented in the submittal quality review form (Attachment A, Form A.7) so that deficiencies can be clearly identified by the contractor. Notes will not be in the form of questions; they must state what has been omitted or what is unacceptable.

Following the detailed review, the PM will send a marked copy of the submittal and a submittal reply form to the contractor. The PM will indicate on the submittal reply form whether deviations from the contract documents were noted, and whether additional submittals or resubmittals by the contractor are required. Copies of the original submittal, review copies, and submittal register and reply forms will be kept in a project submittal file.

5.2.3.2 Field Testing, QC Submittals

Submittals are administrative and technical documents such as design drawings, shop drawings, work plans, permits, certifications, schedules, air monitoring data, reports, and other types of documents and any accompanying samples that are required for the work.

Construction QC submittals are those generated by the CM, CQM, or by the contractor prior to or during construction to demonstrate compliance with the project plans, specifications, and drawings. For materials and equipment procured directly by the owner's representative, the CM or CQM is responsible to check that the proper submittals are provided by the suppliers before accepting delivery. For materials and equipment supplied by the contractor, the CM or CQM is responsible to check that the proper submittals are provided and approved prior to delivery or installation.

The contract documents require that the contractor submit a QC plan, materials certifications, inspection and test data, etc., for review by the CM, CQM, and staff. Documents shall be submitted to the document manager, who will forward copies to the CM, CQM, and PM for conformance evaluation and incorporation into the records. Subcontractor vendor submittals will be made through the contractor. Test data and similar submittals will be submitted with a transmittal form (Attachment A, Form A.6 [295]) outlining the contents of the submittal and the date submitted.

5.2.4 Nonconformance Reports and Corrective Actions

The CQM or CM will notify the contractor of any detected noncompliance with the foregoing requirements. The contractor will take immediate corrective action after receipt of such notice. Such notice, when delivered to the contractor at the work site, will be deemed sufficient notification. If the contractor fails or refuses to comply promptly, the CQM or CM may issue an order stopping all or part of the work until satisfactory corrective action has been taken. Noncompliance notification or stop work orders will be documented in the daily report. Corrective actions will remain open, as noted in the daily reports until acceptable closure of the nonconformance. Verification of the corrective action and its results will be performed by the CM and documented in the daily report.

5.2.4.1 Initiation of Reports

When materials, methods, or work elements are not in accordance with contract documents and immediate resolution (within 24 hours) cannot be achieved, a nonconformance report (Attachment A,

Form A.8 [442]) will be prepared. Nonconformance reports initiated by the CQM will be submitted to the CM, who will issue the nonconformance report to the contractor, copying the document manager, and will check that the contractor develops a corrective action plan.

The written nonconformance report shall be issued as soon as possible after nonconformance is detected. Each nonconformance report will be assigned a unique file number and recorded on a nonconformance report log (Attachment A, Form A.9 [444]). The log will allow the status of the nonconformance to be easily tracked.

The sole exception to this policy will be verbal notices made by the CM or CQM to the contractor for procedures that can be, and are, corrected immediately upon notice. Verbal notices will be recorded in the daily reports with an explanation of corrective measures taken and the time required to bring the work into conformance.

5.2.5 Resolution of Nonconformance

No payment will be issued for nonconforming work until the associated nonconformance is resolved. Each nonconformance report will remain in effect until corrective actions have been taken that meet the intent of the contract documents and the satisfaction of onsite QA representatives. When corrective actions are acceptable, the CM or CQM will document the corrective actions taken and results of retests, and will complete the acceptance portion of the nonconformance report. Likewise, the CM or CQM will observe and document the corrective actions and acceptability of the results on field observation forms. Whenever possible, retests shall be performed by the same CM or CQM who initially detected the nonconformance.

Full documentation is required for resolution of each nonconformance report. When a nonconformance is resolved, the following documentation procedures (Attachment A, Form A.10 [443]) will be followed:

- A copy of the observer's explanation of corrective action and acceptance will be attached to the nonconformance report for review and filing.
- Daily reports, data summaries, etc., will be updated to reflect the resolved status of the original deficiency (for example, notes of corrective action in observation reports, resubmittals, and retest results). At a minimum, the nonconformance report file number, date, or test number that identifies the initial deficiency will be included.

The corrected nonconformance will be checked off the record book, initialed, and dated by the CM or CQM, contractor, or designated representative.

Change Management

It is critical to successfully anticipate and track change to keep on schedule and budget, or if the change will affect these things, to be fully aware of what the ramifications will be to both. Changes or clarifications may be needed during preparation of the deliverables and during field operations. All requests for change or clarification will be documented and resolved. Changes to design sketches, final project plans, field changes, and modifications to operating facilities are subject to design verification measures commensurate with those applied to the original documents (plans, design sketches, etc.).

The PM, approves design or scope changes that do not have an effect on project costs. The PM shall communicate design or scope changes to the SM that will have an effect on project costs and obtain client approval prior to proceeding. The EPA may consult with the engineer, as needed. The requests for information (RFIs) will be used to communicate and document clarifications and modifications that will result in a cost or schedule change. Field orders will be used to document changes/field agreements that do not affect cost or schedule. RFIs and field orders can be requested by any member of the project team and will be tracked and logged by the CQM, PM, and contracts to ensure each RFI is fully addressed and that resolutions are documented.

All changes will be communicated to the PM as soon as the issue arises. The client should be notified of any changes to the proposed scope by the SM.

Complete documentation (Attachment C) will be maintained regarding who initiated the change, who approved the change and when, who implemented (completed) the change, and when was the change completed in the *Change Management Tracking Log* maintained in the project folder.

The following steps should be followed to manage change and potential change:

- As soon as a situation presents itself, either in the field or in the office that may affect schedule or budget, the CM needs to be notified immediately. The CM will notify the PM immediately.
- The PM and CM will determine the potential severity of the change and whether the potential change merits a budget and/or schedule estimate in order to discuss with the EPA. If an estimate is required, the PM will work with project staff to compile an idea of the likely affect(s) on both schedule and budget.
- The PM and SM will discuss the potential change with all parties concerned, the construction contractor, and/or the EPA WAM.

The RFI process involves either the contractor, CQM, or CM identifying a situation in the field that requires change that will result in a change in cost or schedule. The RFI will contain the project number, an RFI identification number, and a title. This information is used for RFI tracking that will be entered by the CQM. The party identifying the change prepares the RFI and forwards it to the PM and CQM. If the RFI is nontechnical, the PM reviews and determines the cost implications and forwards the RFI to the SM as to discuss with the EPA WAM as required. If the RFI is of technical nature, the PM in collaboration with the CQM will forward the RFI to the appropriate project team members to address the information requested.

The response should include a narrative explanation of the resolution and attach any drawings or specifications required to complete the work. The response is returned to the PM and forwarded to the CM and contractor for field implementation. The RFIs are numbered sequentially for individual projects and filed electronically and at the job site.

6.1 Construction Changes

Changes to materials, supplies, work approaches, and corrective action area design during the construction effort will be documented in an overall effort to support sound engineering judgment and cost-effective project delivery. Changes during construction will be documented using the RFI process.

The RFI process involves either the contractor or the CM identifying the situation in the field that requires change. When the contractor identifies a change, the contractor reports the concern to the CM. The CM then prepares an internal memorandum (i.e., RFI) identifying the concern and forwards it to the PM. The PM reviews and forwards to the EPA WAM as needed. The RFI will contain the project number, an RFI identification number, and a title. This information is used for RFI tracking. The PM forwards the RFI to the appropriate personnel who then are responsible to identify the appropriate design representative to evaluate the concern and prepare the appropriate response. The response should include a narrative explanation of the resolution and attach any drawings or specifications required to complete the work. The response is returned to the PM and forwarded to the CM for field implementation. The RFIs are numbered sequentially for individual projects and filed at the job site with the CM.

Note that the RFI process is a field construction tool for documenting changed field conditions or other issues that may require a deviation from project requirements identified in the specifications of the project plans. The RFI is intended to obtain input and concurrence from the management personnel responsible for developing the project plans. If issues identified in the RFI may require a change to the project scope, schedule, or budget, this should be clearly conveyed in the RFI. In such instances, it is the responsibility of the PM/CM to work closely with the contract administrator to seek and obtain proper approval from EPA (in accordance with established contract procedures) before implementing the change recommended in the RFI.

Testing Requirements

The quality of materials and workmanship will be controlled by the contractor or supplier who furnishes the work or material involved; however, the contractor has the ultimate responsibility for QC of its subcontractors and vendors.

The CM and/or CQM will observe QC testing of the construction materials, workmanship, and the contractor's QC activities. Specific QA requirements for observation and verification testing are detailed in the attachments. Attachment A contains samples of forms that may be used or modified to document QA activities.

QC testing, sampling, and inspecting will be conducted by the contractor, the contractor's supplier, or contracted independent testing companies. The contractor will provide to the CM or CQM, in a timely fashion or as specified, copies of QC inspection and testing reports if specified in the contract. The reports will include documentation of failed tests and corrective actions taken.

7.1 Observation and Verification Testing

The CM, CQM, or other designated personnel will document observations in the daily report form (Attachment A, Form A.11) and will document verification tests in the appropriate testing and field forms. Documentation will be recorded in ink. To correct an error in a testing or field form, a single line will be drawn through the error with the correct information entered next to the error. All corrections will be initialed and dated.

The field personnel will obtain, review, and become familiar with the applicable procedures, codes, standards, specifications, drawings, observation, and verification testing requirements, and accept or reject criteria.

Daily observation records and verification testing forms will contain at least the following:

- Item, condition, or activity observed or testing performed
- Location of observation or verification test
- Date of the observation or verification test
- CM's name and signature
- Type of observation or verification test
- Observation or verification test source criteria (for example, drawings and specifications)
- Results or acceptability
- Reference to corrective action taken in connection with nonconformance
- Relevant nonconformance report number

7.2 Quality Assurance Contracts

The QA contracts include contracts for independent laboratory testing. Items or services procured for QA purposes that may affect the measurement of the quality of the construction project will meet the requirements of the contract specifications and this CQAP, as applicable.

7.3 Testing

Sampling and testing will be performed to verify that control measures are adequate to provide a product that conforms to project plans, specifications, and drawings. The Sampling and Testing Log binder will include all testing and field forms to be used during construction to document the sampling

and testing conducted. Offsite testing will be performed by laboratories and testing companies with accreditation and certifications through industry recognized organizations and standards. Onsite testing will be performed by individuals with documented training and experience to perform the testing as determined by their supervisor and accepted by the remedial program quality manager.

Testing services required for execution of the project will be contracted either directly by the owner's representative or by its contractor(s). The testing services will be procured according to a scope of work, which will be compliant with the project requirements and specifications. The scope of work will specify specific analytical and geotechnical testing methods (for example, ASTM International or similar standards), professional services, and other measurement protocols as specified in the project plans, designs, and specifications. The scope of work will also specify the nature of the report or deliverable required of the testing laboratory, including requirements for professional certification. Scheduling of site services will be the responsibility of the CM or CQM.

The following activities will be performed and documented during testing:

- Verify that testing procedures comply with contract requirements.
- Verify that facilities and testing equipment are available and comply with testing standards.
- Check test instrument calibration data against traceable certified standards.
- Verify that recording forms and the test identification system, including all test documentation requirements, have been prepared.
- Record results of all tests, both passing and failing tests, on the appropriate field form. All tests will be compiled daily by the CQM and documented in the site-specific tracking log and daily report for the date taken.
- Give the section reference, location where tests were taken, and the sequential control number identifying the test. Actual test reports may be submitted later in accordance with project specifications with a reference to the test number and the date taken.

The test results must be signed by the testing laboratory's representative authorized to sign certified test results. The signed reports, certifications, and other documentation will be submitted to EPA as part of the construction completion reports.

7.3.1 Borrow Source Sampling

The contractor will identify suppliers of borrow materials as part of the preconstruction activities that are necessary for site improvements to roadways and installation of the new water line. Borrow sources may include general backfill (sand), gravel, and topsoil.

The contractor will collect samples of the borrow materials at the source and submit them to the owner's representative for laboratory analysis as outlined in the specifications. Analytical results will be tracked electronically by the CQM or designee throughout the site preparation RA. The results will be made available to the CM, PM, SM, and design team for review to ensure that materials comply with project specifications and meet criteria.

Additional borrow samples will be collected during construction activities to verify continued compliance with project specifications. Additionally, a sample will be retained by the owner's representative for visual comparison during construction activities to confirm consistency in the materials. If inconsistencies in the materials are observed, the owner's representative may collect additional samples to determine continued compliance or nonconformance with project requirements.

7.3.2 Dust Monitoring and Air Sampling

All air sampling will be conducted as outlined in the air monitoring plan (Attachment D). Real-time air monitoring for particulate matter will be conducted continuously at each property and at the FA near the borrow material staging pile and excavated material staging pile while earthwork is being performed or when the staging pile is being constructed.

Personal air sampling pumps will be used in conjunction with dust-monitoring equipment and will have samples collected for laboratory analysis to determine potential exposure to arsenic, cadmium, lead, and zinc. These samples will be representative of the worst-case exposure that may occur to any potential receptors outside of the excavation area, such as residents or pedestrians, from a given excavation. Based on the results of the first week of personal air sampling, the sampling plan will be reviewed to evaluate the monitoring program for the remainder of the field event. Factors that will be considered include, but are not limited to, the following: (1) results of the first round of personal air sampling, (2) level of soil contamination anticipated in future excavations based on previous soil sampling data, (3) soil conditions (wetness) anticipated, and (4) level of work activity anticipated. Air monitoring is discussed in further detail in the air monitoring plan (Attachment D).

7.3.3 Waste Characterization Sampling

Excavated soil will be stockpiled at FA for use in the future remedy of FA. Stockpiled soil will be sloped no greater than 4 to 1 at the FA. The stockpile will be covered with clean soil and seeded.

Aqueous waste characterization sampling will be performed during the RA. The sampling frequency and analyses will be determined by the approval requirements of the selected disposal facility. Waste profiles will be reviewed by the owner's representative's EM or waste coordinator prior to submittal to EPA for generator signature, which can then be forwarded to the landfill for final approval. Offsite disposal of soil waste will be coordinated and arranged upon receipt waste profile approval. The contractor will use the Waste Tracking Log (Attachment A, Form A.12) to manage waste.

7.3.4 Soil Compaction Testing

Soil compaction testing will be performed on borrow source materials placed during backfill. Compaction testing will be performed in accordance with Specification Section 31 23 23, Fill and Backfill. The contractor will perform in situ density testing using a nuclear density gauge or approved equivalent to demonstrate proper compaction.

The contractor will also compact material placed in the soil staging pile. The soil should be compacted using a bulldozer or owner's representative-approved equipment after each load is placed at the FA. The staging pile will then be covered with 4 inches of clean topsoil and lightly compacted to minimize settlement while still allowing infiltration of water and penetration of roots.

7.4 Sampling and Testing Log

As tests are performed, the CQM or approved supervising field staff, will record the following information on appropriate field forms, which will be available in the Sampling and Testing Log (Attachment A, Form A.13):

- Test reference
- Field personnel observing the test
- Date the test was conducted
- Time the test was conducted
- Date the test results were received
- Results of the tests

- Whether they comply with the specifications
- Other relevant information pertaining to the test being performed
- Any remarks and acknowledgment that an accredited testing laboratory was used

Applicable project requirements, tests, or analytical procedures used must be cited on the respective field form. The CQM will obtain and compile all test results and update the site-specific electronic tracking log and field documentation binder daily, and maintain the records onsite in the project files.

Testing and inspections performed and results will be summarized in the daily report for the date on which the test or inspection was performed. The updated electronic tracking log will be available for review by the CM, PM, SM, and program quality manager.

7.5 Testing Companies

Independent testing companies and testing laboratories that are authorized or certified to operate in the State of Illinois will be employed on this project. Prior to the start of the work, the name(s), facility information, qualifications, and certifications of the testing companies and laboratories will be acquired and maintained in the project files.

Laboratories performing chemical analysis of samples hold current accreditation under the EPA National Environmental Laboratory Accreditation Program and hold current certification by the State of Illinois.

Laboratories performing geotechnical testing will be participating in an accreditation program and will be certified to perform the specified analytical method.

Inspection

Receiving, in-process, and completion inspections will be performed during site preparation activities. An inspection is necessary for acceptance of all the items listed as DFOWs in Section 3. The DFOWs are summarized in Section 3.1. A completion inspection is required prior to final EPA acceptance.

The CQM will be responsible for verifying the in-process inspections are documented in the daily reports and verifying the site-specific electronic tracking log is completed. The CQM is also responsible for verifying that the receiving inspections are documented in the daily report. The CQM is responsible for maintaining the punch list during the progress of the work.

8.1 Material Inspections

The CM will verify that the material and equipment received at the project site are inspected for compliance with the project requirements and are in good working order before being accepted for use on the site. Completion of any field tests will be documented in the Field Critical Inspection Log (Attachment A, Form A.14) and photographs taken will be documented in the Photograph Log (Attachment A, Form A.15) by the CQM. Any material or equipment not meeting the project requirements will be rejected or a written variance given by the CQM or designee. The performance and results of material and/or equipment inspections will be documented in the daily report.

8.2 Completion Inspections

8.2.1 Punch List Inspection

Punch list items should be addressed during the course of the work, and the punch list inspection will occur near the completion of work for each property. The CQM will inspect the work with the CM, and develop a punch list of items that do not conform to the approved drawings and specifications. The punch list will include remaining items on the rework items list that were not corrected before the punch list inspection. The punch list will include the estimated date by which the deficiencies will be corrected. The CQM and CM will make follow-up inspections to ascertain whether deficiencies have been corrected. Once this is accomplished, the owner's representative will notify EPA that the feature of work is ready for prefinal inspection.

8.2.2 Prefinal Inspection before Final Client Inspection

Property-specific reviews will be performed after each property is restored to document the restoration and the condition of the surrounding area. Photographs and/or video of the restored work areas will be obtained to document the post-construction condition. A letter will be prepared for the property owner documenting the completion of the RA at the property. The current property owner will be asked to sign off that his or her property has been restored to the condition agreed to during the preconstruction meetings or to identify any outstanding issues to be addressed.

After the property owner has signed off on the RA, a prefinal inspection is required to check that all aspects of the work will be acceptable to the client and that punch list work has been completed. A prefinal inspection punch list may be developed as a result of the inspection. Each deficiency noted in the punch list will be referenced (applicable specification paragraph, drawing, etc.). The CQM will check that all items on this list are corrected prior to notifying the SM/CM that a final client inspection can be scheduled.

8.2.3 Final Client Inspection

The CQM, CM, PM, SM, other project management personnel, and client representative will be in attendance at the final client inspection. Other stakeholders may be in attendance, too. The inspection will be considered closed when the work has been accepted by the client representative and acceptance has been documented and signed by all parties in a final inspection form.

Project Documentation

All project quality activities and submittals pertaining to the contract and contract documents and the CQAP will be documented.

9.1 Photographic Record

A project photographic record will be made and kept as part of the quality records. In addition to recording construction progress and “as-constructed” installation details, the photographic record will document deviations from design and nonconformance items. Each photograph will be electronically stamped with the date the photograph was taken, and will be transferred daily to the network server for storage and viewing. Photographs will be organized in a folder with subfolders identified by specific construction activities and/or properties (for example, specific DFOWs, pre-remediation activities, or final restoration activities).

Digital cameras will be used by the project team and photographs electronically logged and filed for record purposes. The CQM, CM, or designated field personnel will maintain the photographic records.

9.2 Field Documentation

The object of field documentation is to check that appropriate project information is documented in logbooks or on appropriate field forms during construction. Documentation is important for communicating with other staff members and other project representatives. The following regular QC observations, inspections, and records of general QC activities should be made:

- Record daily progress and associated QA/QC sampling (i.e., reference appropriate testing or inspection field form)
- Record construction operations, sequence, staging, etc.
- Maintain transportation and waste disposal records (Attachment A, Form A.12)
- Describe deviations from expected conditions, or unexpected problems and their resolution

The CQM will maintain a record of daily QC activities during construction in a field logbook, or on appropriate field forms during construction. The logbook and field forms will be available upon request for review. They will be used to record at least the following information:

- Date of entry
- Project name and location
- Time that work starts and ends every day
- Summary of weather conditions
- General description of work, size of work crew, and equipment and personnel onsite
- Duration and type of breaks
- Start time and duration of downtime resulting from equipment breakdown, weather, or emergencies
- Summaries of QC meetings and actions recommended to be performed
- Conversations with contractors, property owners, or residents
- QC testing equipment and personnel
- Identification of work locations
- Description of materials delivered to the site, including QC data
- Decisions made regarding defective work or corrective measures implemented, or both
- Field tests

- Sampling activities

The field forms and the bottom of the last page of the daily field logbook will be signed or initialed. Each entry will be dated to show that notes are being entered daily.

A line-out will be placed on any part of an unused page. One-line strike-throughs will be used to show corrections to entries. The strike-throughs will be initialed and dated. No correction fluid may be used.

The field documentation will also be documented in the daily report and on appropriate field forms.

9.3 Daily Report

The daily report is the daily record of operations on the job site and will be kept current. It is an essential tool for recording and reporting the daily production, safety, and quality activities of the project.

The reports are the official record of work performance and compliance with project plans, drawings, and specifications. Therefore, it is important that the reports are correct and timely.

The CM is responsible for preparing the daily report and submitting the reports to the PM. The PM and CM will provide operational information, and the HSM will provide information on the health and safety activities for the daily report. The report also includes reports from contractor to address, at a minimum, the following:

- Quality aspects of the project that is being performed by the contractor
- Scheduling and resource issues
- Site safety inspections and concerns
- Environmental concerns
- Job progress
- Control inspections
- Tests performed and their results
- Personnel and equipment onsite
- Material received

The CQM will review the daily reports for accuracy and completeness because these reports are used to prepare the final reports for the project. The PM will review the reports and check that the quality process is working on the project. The project quality manager will review the reports to check that the quality processes and systems are working on the program.

The daily report template is included in Attachment A (Attachment A, Form A.11). At a minimum, the following information should be included to the daily report:

- Tailgate safety meeting minutes
- Summary of work performed that day
- Man-hours for each contractor
- Equipment used onsite
- Changed conditions, delays, and conflicts encountered, including QC issues
- DFOWs
- Submittal status
- Inspection conducted and findings/result of inspection
- Test conducted
- Waste disposal summary

9.3.1 Monthly Progress Report

The CM or CQM will prepare a monthly progress report (Attachment A, Form A.16). The report will be transmitted to the QA team members and the SM. The monthly progress report will include, at a minimum, the following items:

- Work accomplished in the current month
- Work scheduled for the next month
- Project schedule: total days worked and total days remaining to completion of the current phase of work
- Problems encountered and resolutions, and associated schedule and budget impacts
- Construction budget: basic contract, and approved and denied change orders

9.3.2 Project Records

Records that are generated by the QC system must be maintained in an orderly manner. The CQM will make sure the project quality records are readily available for reference. The records should be arranged based on input from the document manager and include the following items:

- Submittals, including Submittal Register
- Daily reports
- Meeting minutes
- Inspection reports—Preparatory, Initial, and Follow-up Phases
- Punch list inspection results
- Pre-final and final inspection results
- Rework items lists
- Test results, including appropriate field forms and the site-specific electronic tracking log
- Chain-of-custody forms
- Construction change order and log
- Red-lined drawings/as-built drawing
- Field order and log
- RFIs arranged in numerical order and RFI log
- Nonconformance notices and corrective actions
- Certificates and qualifications
- Calibration records
- Photographs
- Correspondence (e-mails, conversation records, etc.)
- Dust/particulate readings (daily)
- Personal and perimeter air sampling results
- Waste tracking

Table 9-1. Reporting and Field Documentation Required
Old American Zinc Superfund Site Surrounding Properties

Report or Documentation Requirement	Completed By	Delivered To	Frequency	Report Description
Daily Report	CM	CQM	Daily	Documents daily construction and QC activity on the project site
Daily Field Logbook	CM/CQM/SSC	Server Only	Daily	Upload a scanned copy of the filed logbook daily
Daily Health and Safety Briefing Records	SSC	Health and Safety Manager	Daily	Documents daily health and safety “tailgate” meetings
Safe Behavior Observations	SSC/CM	Health and Safety Manager	Weekly	Records observation of contractor work and documents whether or not work was performed in a safe manner
Self-Assessment Checklists	SSC	Health and Safety Manager	Per HASP	Upload a scanned copy of the completed form at the frequency described in the HASP
Project Status Meeting Minutes	PM	Project Team	Weekly	Minutes of any project status meeting held.
Submittal Register	CQM	Project Manager	As-needed	Update the submittal register to document receipt and review of contractor submittals
Photographic Record	CM	Project Manager	Daily	Photographic record showing construction progress, special situations
Daily QA/QC Verification Sheet	CQM	Construction Manager	Daily	Check list to ensure appropriate documentation and filing procedures are implemented
Change Management Log	PM	Site Manager	As-needed	Tracking of out-of-scope activities that have been completed to monitor potential budget impacts
HASP	HSM	Health and Safety Manager	Once	Presents health and safety procedures to be followed while onsite
Contractor AHAs	Sub	SSC and Health and Safety Manager	Once	Presents activity hazards and mitigation measures to be followed by the contractor while onsite
Contractor SOWs	Various	Project Manager	As-Needed	Presents bid packages as well as executed contracts
Permits	Various	Project Manager	Once	Required permits that must be completed before beginning construction activities

Table 9-1. Reporting and Field Documentation Required
Old American Zinc Superfund Site Surrounding Properties

Report or Documentation Requirement	Completed By	Delivered To	Frequency	Report Description
CQAP	QCM	Project Manager	Once – as needed for updates	Describes the quality management process activities that will be implemented at the site during the construction activities.
Risk Management Plan and Log	PM	Project Manager	As-Needed	Presents project risks as well as mitigation measures for construction activities; will be updated as various risks are identified or removed
Stormwater Pollution Prevention Plan	Various	Environmental Manager, Project Manager	Once	Provides site specific stormwater pollution prevention measures
Waste Management/Transportation and Disposal Documents	Field Team	Environmental Manager, Project Manager	As-Needed	Presents the results of the waste characterization activities including waste profiles and waste manifests and waste tracking log
Transportation and Disposal Plan	EM	Project Manager	Once	Describes environmental and waste management requirements for construction

Project Closeout

Project closure is to ensure all pertinent project records are identified, labeled, and properly maintained for easy retrieval at a later date. Closeout activities will be conducted throughout the progress of the project. In this way, closeout at the end of the project can be completed in an efficient and timely manner as part of budgeted activities. Closure activities to be completed for this project will include the following:

- Conduct closeout meeting with project team, including client (when possible), and obtain feedback.
- Ensure all project documentation is filed including both electronically and hard copy.
- Consolidate, purge, and archive files.
- Summarize health and safety lessons learned and forward to HSM.
- Summarize quality lessons learned and forward to EPA Program Construction QA Manager.
- Provide feedback and rewards/recognition to project staff throughout the delivery of this project.
- Submit regular invoices, and reconcile all cost and revenue data in the financial accounting system after final payment.
- Close all project tasks and contractor purchase orders in the financial accounting system.
- Collect final payment, including outstanding accounts receivables.
- Notify client that the project is complete and formally closed.

References

ENTACT. 2008. *Baseline Ecological Risk Assessment for the Former American Zinc Plant Site, Fairmont City, Illinois*. August.

ENTACT. 2009a. *Final Remedial Investigation Report, Old American Zinc Plant Site, Fairmont City, Illinois*. March.

ENTACT. 2009b. *Baseline Human Health Risk Assessment for the Former American Zinc Plant Site, Fairmont City, Illinois*. March.

ENTACT. 2012. *Final Feasibility Study Document for the Old American Zinc Plant Site, Fairmont City, Illinois*. February.

U.S. Environmental Protection Agency (EPA). 1995. *Remedial Design/Remedial Action Handbook*. Office of Emergency and Remedial Response. Publication 540/R-95/059. June.

U.S. Environmental Protection Agency (EPA). 2012. *Record of Decision, Old American Zinc Plant Superfund Site*. September.

U.S. Environmental Protection Agency (EPA). 2014. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. EPA Publication No. SW-846. July.

Glossary

Construction quality assurance plan (CQAP)—Establishes the guidelines and requirements to be used for project delivery to meet client objectives and achieve the standards. The primary objective of the CQAP is to document requirements, procedures, and methodology for quality assurance and quality control during construction of this project.

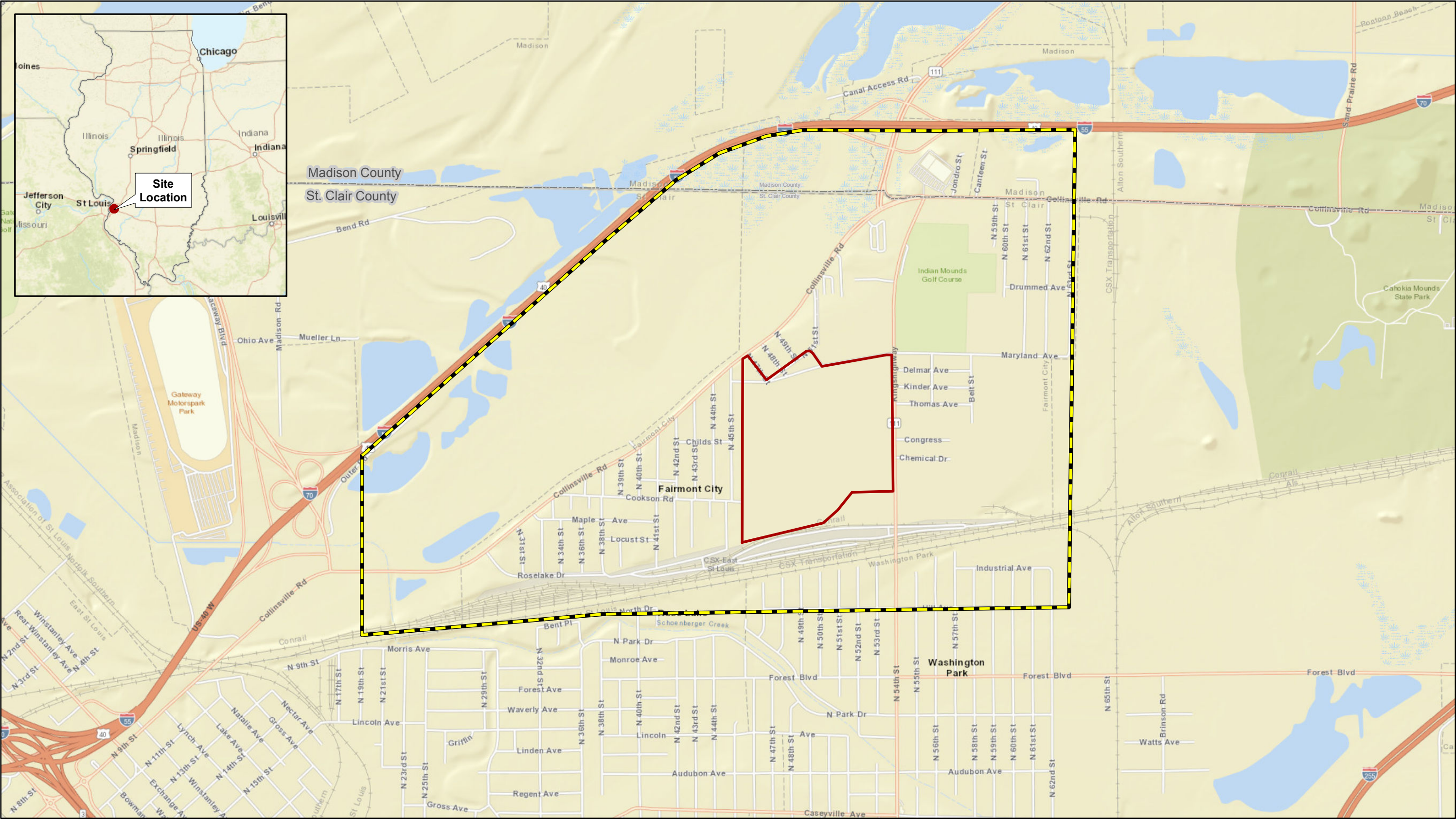
Quality assurance (QA)—Refers to the overall quality process. It is the assurance that the construction effort is conducted in a manner consistent with the design and meets the requirements of the project objectives.

Quality control (QC)—Refers to a planned system for monitoring, controlling, and documenting the quality of materials, supplies, and workmanship in a manner consistent with the execution plan and the drawings and specifications. Monitoring, controlling, and documenting are the active tasks associated with quality management. This document does not specifically address QC requirements.

Project instructions—Provide management instructions for construction operations, documentation, and reporting for work to be performed. The instructions provide guidance to the project team and clarify the site manager's expectations regarding personnel assignments (including level of effort, responsibilities, accountability, project goals, direction, processes, and procedures through the construction phase of the project. The project instructions define parameters for the implementation of the CQAP.

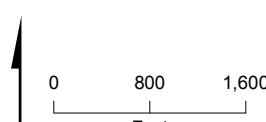
Construction quality submittals—Refers to submittals generated during or immediately prior to construction to demonstrate compliance with the project plans, drawings, and specifications. Construction quality submittals include daily reports, shop drawings, schedules, sample documentation, calibration records, photographs, product data, samples, field change request documentation, administrative and closeout submittals, and additional technical support data presented for review and approval.

Figures



Legend

- County Boundary
- Facility Area Boundary
- Surrounding Properties Boundary (Approximate)





Notes:
1. Basemap provided by ArcGIS Online World Street Map.


Figure 1-1
Site Location Map
Old American Zinc Superfund Site
Fairmont City, Illinois


Attachment A

Forms

 Contract No:		PREPARATORY PHASE REPORT		REPORT NO:	REPORT DATE: REVISION NO: REVISION DATE:	TASK ORDER NO:
PROJECT NO:		DEFINABLE FEATURE OF WORK:		SITE/ACTIVITY:		
PERSONNEL PRESENT	CLIENT REP NOTIFIED _____ HOURS IN ADVANCE: YES <input type="checkbox"/> NO <input type="checkbox"/>					
	NAME		POSITION		COMPANY	
SUBMITTALS	REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER.		HAVE ALL SUBMITTALS BEEN APPROVED? YES <input type="checkbox"/> NO <input type="checkbox"/>			
	IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED?					
	ARE ALL MATERIALS ON HAND? YES <input type="checkbox"/> NO <input type="checkbox"/>					
	IF NO, WHAT ITEMS ARE MISSING?					
MATERIAL STORAGE	ARE MATERIALS STORED PROPERLY? YES <input type="checkbox"/> NO <input type="checkbox"/>					
	IF NO, WHAT ACTION IS TAKEN?					
SPECIFICATIONS	REVIEW EACH PARAGRAPH OF SPECIFICATIONS.					
	DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK.					
PRELIMINARY WORK & PERMITS	ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE.					
	IF NO, WHAT ACTION IS TAKEN?					

 CONTRACT NO:		PREPARATORY PHASE REPORT		REPORT NO:	REPORT DATE: REVISION NO: REVISION DATE:	TASK ORDER NO:
PROJECT NO:		DEFINABLE FEATURE OF WORK:		SITE/ACTIVITY:		
TESTING	IDENTIFY TEST TO BE PERFORMED, FREQUENCY, AND BY WHOM.					
	TEST		FREQUENCY		PERFORMER	
	WHEN REQUIRED?					
	WHERE REQUIRED?					
	REVIEW TESTING PLAN.					
	HAVE TEST FACILITIES BEEN					
	TEST FACILITY			APPROVED?		
			YES <input type="checkbox"/> NO <input type="checkbox"/>			
			YES <input type="checkbox"/> NO <input type="checkbox"/>			
SAFETY	ACTIVITY HAZARD ANALYSIS APPROVED? YES <input type="checkbox"/> NO <input type="checkbox"/>					
	REVIEW APPLICABLE PORTION OF EM 385-1-1.					
MEETING COMMENTS	CLIENT/AGENCY/STAKEHOLDER COMMENTS DURING MEETING.					
OTHER ITEMS OR REMARKS	OTHER ITEMS OR REMARKS:					
PROJECT QC MANAGER NAME		PROJECT QC MANAGER'S SIGNATURE			DATE	

 Contract No:		INITIAL PHASE CHECKLIST (ATTACH ADDITIONAL SHEETS IF NECESSARY)		REPORT DATE: REVISION NO: REVISION DATE:
CTO NO:		PROJECT NAME/LOCATION:		REPORT NO:
PROJECT NO:		PROJECT QC MANAGER:		SITE H&S SPECIALIST:
SPEC SECTION:		DEFINABLE FEATURE OF WORK:		SCHEDULE ACT NO. INDEX #
PERSONNEL PRESENT	GOVERNMENT REP NOTIFIED		HOURS IN ADVANCE: YES <input type="checkbox"/> NO <input type="checkbox"/>	
	NAME		POSITION	COMPANY/GOVERNMENT
PROCEDURE COMPLIANCE	IDENTIFY FULL COMPLIANCE WITH PROCEDURES IDENTIFIED AT PREPARATORY. COORDINATE PLANS, SPECIFICATIONS, AND SUBMITTALS COMMENTS:			
PRELIMINARY WORK	ENSURE PRELIMINARY WORK IS COMPLETE AND CORRECT. IF NOT, WHAT ACTION IS TAKEN?			
WORKMANSHIP	ESTABLISH LEVEL OF WORKMANSHIP. WHERE IS WORK LOCATED?			
	IS SAMPLE PANEL REQUIRED?		YES <input type="checkbox"/> NO <input type="checkbox"/>	
	WILL THE INITIAL WORK BE CONSIDERED AS A SAMPLE?		YES <input type="checkbox"/> NO <input type="checkbox"/>	
	(IF YES, MAINTAIN IN PRESENT CONDITION AS LONG AS POSSIBLE AND DESCRIBE LOCATION OF SAMPLE)			
RESOLUTION	RESOLVE ANY DIFFERENCES? COMMENTS:			
CHECK SAFETY	REVIEW JOB CONDITIONS USING EM 385-1-1 AND JOB HAZARD ANALYSIS COMMENTS:			

 Contract No:		INITIAL PHASE CHECKLIST (ATTACH ADDITIONAL SHEETS IF NECESSARY)		REPORT DATE:	
CTO NO:		PROJECT NAME/LOCATION:			REVISION NO:
PROJECT NO:		PROJECT QC MANAGER:		REVISION DATE:	
SPEC SECTION:		DEFINABLE FEATURE OF WORK:		SCHEDULE ACT NO.	REPORT NO:
OTHER	OTHER ITEMS OR REMARKS				
				QC MANAGER	DATE

POTENTIAL IMPACT			
Cost Impact:		Schedule Impact:	
Activity Impacted:			
Work Days Impacted:		Estimated Cost Impact:	
Supporting Documentation:			
REQUESTOR INFORMATION			
Requested By:			
	Printed Name	Title	
	Signature	Date	
RESPONSE DISPOSITION/CONCURRENCE			
Response Disposition/Concurrence:			
Further Action Required (if any):			
Response Provided By:			
	Printed Name	Title	
	Signature	Date	

FORM NO.	A.4 [273]
TITLE:	Change Order
PURPOSE:	Provides contractual means for ordering modifications to the subcontract documents.
PREPARED BY:	Contractor or owner
DIRECTED TO:	Subcontractor
COPIES TO:	Contractor, owner, resident project representative
COMMENTS:	All revisions to the subcontract documents involving changes to the subcontract cost or subcontract times must be documented using this form.



CHANGE ORDER

CHANGE ORDER NO.¹: _____

TO SUBCONTRACTOR: _____

PROJECT: _____ PROJECT NO: _____

OWNER: _____

CONTRACTOR: _____

The following modification(s) to the Subcontract are hereby ordered (use additional pages if required):

Reason for Modification(s):

Attachments (List Supporting Documents):

Subcontract Amount or Price		Subcontract Times (Calculate Days)	
Original	\$ _____	Original Duration	_____ Days
Previous Change Order(s) (Add/Deduct)	\$ _____	Previous Change Order(s) (Add/Deduct)	_____ Days
This Change Order (Add/Deduct)	\$ _____	This Change Order (Add/Deduct)	_____ Days
Revised Subcontract Amount	\$ _____	Revised Subcontract Time	_____ Days

The Revised Subcontract Completion Date is:

_____, _____

Owner	Subcontractor	Contractor
By: _____	By: _____	By: _____
Date: _____	Date: _____	Date: _____

¹ Number all Change Orders consecutively.

FORM NO. A.5 [275]
TITLE: Field Order

PURPOSE: Orders minor revisions to the subcontract documents that do not involve changes in the subcontract price or subcontract times.

PREPARED BY: Contractor

DIRECTED TO: Subcontractor

COPIES TO: Owner, Construction Manager, Document Manager, Project Field File

COMMENTS: Use sparingly; if the revision involves changes in the subcontract price or times, either a Change Order or Written Amendment should be implemented.

ch2m

FIELD ORDER

TO SUBCONTRACTOR: _____ FIELD ORDER NO: _____

PROJECT: _____ PROJECT NO: _____

OWNER: _____

CONTRACTOR: _____

The following minor changes in the work have been ordered and authorized:

Description of Changes:

Reason for Field Order:

Reference Drawing sheets and section(s) or detail(s):

Reference Specification section(s)/paragraph(s):

The intent of this Field Order is to authorize minor variations to the Subcontract Documents not involving a change in Subcontract Price or Subcontract Times and which are compatible with the design concept of the completed Project. This Field Order is binding upon OWNER and also on SUBCONTRACTOR who will perform the work promptly. If OWNER or SUBCONTRACTOR believes an adjustment to the Subcontract Price or Subcontract Times is necessary, the party may make a claim therefore in accordance with the General Conditions.

Issued by Contractor:

Subcontractor Receipt Acknowledgement:

By: _____
Authorized Representative

By: _____

Date: _____

Title: _____

Date: _____

Copy:

1. Owner
2. Resident Inspector
3. Document Manager
4. Project Field File



**TRANSMITTAL OF SUB CONTRACTOR'S
SUBMITTAL (ATTACH TO EACH SUBMITTAL)**

DATE: _____

TO: _____

Submittal No.: _____

☐ New Submittal ☐ Resubmittal

Project: _____

Project No.: _____

Specification Section No.: _____

(Cover only one section with each transmittal)

FROM: _____

Subcontractor

Schedule Date of Submittal:

SUBMITTAL TYPE: ☐ Shop Drawing ☐ Sample ☐ Informational

The following items are hereby submitted:

Number of Copies	Description of Item Submitted (Type, Size, Model Number, Etc.)	Spec. and Para. No.	Drawing or Brochure Number	Contains Variation to Subcontract	
				No	Yes

SUBCONTRACTOR hereby certifies that (i) SUBCONTRACTOR has complied with the requirements of Subcontract Documents in preparation, review, and submission of designated Submittal and (ii) the Submittal is complete and in accordance with the Subcontract Documents and requirements of laws and regulations and governing agencies.

By: _____

SUBCONTRACTOR (Authorized Signature)

CH2M Submittal Review Form A.7

Project Name

Document/Product Name:

Date Comments Submitted:

Comment Number	Reference Page or Section Number	Reviewer	CH2M Review Comment	Response
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FORM NO.	A.8 [442]
TITLE:	Nonconformance Report
PURPOSE:	Written notice of deficiencies or rejection of work and a demand for corrective action.
PREPARED BY:	Contractor or resident project representative
DIRECTED TO:	Subcontractor
COPIES TO:	Owner, contractor, document manager, project field file
COMMENTS:	Description should contain accurate locations and specification references. The document may figure strongly in later contractor claims. EJCDC General Conditions require that “deficiencies” in the work be corrected; while “rejected” work must be removed and replaced.

ch2m

Nonconformance Report

TO SUBCONTRACTOR: _____ NOTIFICATION NO: _____

PROJECT: _____ PROJECT NO: _____

OWNER: _____ TIME: _____ AM/PM

CONTRACTOR: _____ OBSERVER: _____

Pursuant to the GENERAL CONDITIONS of the Contract, you are hereby notified of the following noncompliance violation:

Specification Section: _____ Paragraph: _____

Violation:

Subcontract Requirement:

Violation Detected by: ☐ Test ☐ Inspection ☐ Observation

Noncompliance Work is: ☐ Defective ☐ Rejected

Estimated Value of Noncomplying Work: \$ _____

Defective work shall be corrected. Rejected work shall be removed and replaced. All costs shall be borne by the Subcontractor. Payment will not be made for defective or rejected work. Subcontractor shall notify Contractor when defective or rejected work is corrected.

Received by:

Contractor: _____
Authorized Representative

Subcontractor

Date: _____

Title

Date

Distribution:

1. Owner
2. Contractor
3. Document Manager
4. Field File

DEFECTIVE/REJECTED WORK NOTIFICATION LOG

PAGE: 1

PROJECT: _____ PROJECT NO: _____

SUBCONTRACTOR: _____

[illegible]



NOTIFICATION OF CORRECTION OF DEFECTIVE/REJECTED WORK

TO SUBCONTRACTOR: _____ PREVIOUS NOTIFICATION NO: _____ DATE: _____

PROJECT: _____ PROJECT NO: _____

OWNER: _____

CONTRACTOR: _____

The below listed Defective/Rejected work has been reinspected and the results of the Subcontractor's corrective actions have placed the work in compliance with the Subcontract Documents.

Description of Violation:

Description of Correction:

Contractor: _____
Authorized Representative

Date: _____

Distribution:

1. Contractor
2. Owner
3. Field File




DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

CONTRACT NAME:		REPORT NO:			
CONTRACT NUMBER:		REPORT DATE:			
TASK ORDER NUMBER:		REVISION DATE:		REV #	
PROJECT NAME:		SITE NAME:			
PROJECT NUMBER:		PROJECT DESCRIPTION:			
PROJECT MANAGER:		FIELD QUALITY MANAGER:			
CONSTRUCTION MANAGER:		H&S SAFETY Manager:			
AM WEATHER:		PM WEATHER:		MAX TEMP (F):	
				MIN TEMP (F):	

SUMMARY OF WORK PERFORMED

HEALTH AND SAFETY

	Was A Job Safety Meeting Held This Date?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Were there any lost-time accidents this date? (If yes, attach copy of completed OSHA report)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Was a Confined Space Entry Permit Administered This Date? (If yes, attach copy of each permit)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Was Crane/Manlift/Trenching/Scaffold/HV Elec/High Work/Hazmat Work Done? (If yes, attach statement or checklist showing inspection performed)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Was Hazardous Material/Waste Released into the Environment? (If yes, attach description of incident and proposed action)	<input type="checkbox"/> Yes	<input type="checkbox"/> No

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

TAILGATE TOPICS:

SAFE BEHAVIOR OBSERVATIONS:

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Total Hours Today



DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

TOTAL HOURS

EQUIPMENT ON HAND (Initial Inspection conducted to check if the Equipment is clean and in good working order/operable)

Description of Equipment	Make/Model/Manufacture	Equipment ID Number	Inspection Performed By
--------------------------	------------------------	---------------------	-------------------------

EQUIPMENT COMMENTS (acceptance status, inspection findings, etc.):

PLANNED WORK

Planned Work / Test for Tomorrow:

Planned Work / Test for Next Week:

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED

(List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)

VISITORS AND DISCUSSIONS:

REGULATORY COMPLIANCE REPORT



DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:		Signature of Inspector:					
Accumulation / Stockpile Area Inspected:	See Waste Tracking Log						
No of Containers:	Na	No of Tanks	N/A	No of Roll-Off Boxes:	N/A	No. of Drums	N/A

Inspection Results:

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):



DAILY CONTRACTOR QUALITY CONTROL REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DEFINABLE FEATURES OF WORK STATUS

DFOW No.	Definable Feature Of Work	Preparatory	Initial	Follow-Up
1	Mobilization and Setup	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Site Preparation Work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Site Restoration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Demobilization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

WAS PREPARATORY PHASE WORK PERFORMED TODAY? ☐ YES ☐ NO

IF YES, FILL OUT AND ATTACH SUPPLEMENTAL PREPARATORY PHASE CHECKLIST.

PREPARATORY

DFOW No.(from list above).	Description	PREPARATORY PHASE REPORT NO. 02

INITIAL AND FOLLOW-UP FEATURE OF WORK COMMENTS

DFOW No.(from list above)	Phase	Comment/Finding/Action
	Initial <input type="checkbox"/> Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/> Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/> Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/> Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/> Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/> Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/> Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/> Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/> Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/> Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/> Follow up <input type="checkbox"/>	

REWORK ITEMS

REWORK ITEMS IDENTIFIED TODAY (NOT CORRECTED BY CLOSE OF BUSINESS)

REWORK ITEMS CORRECTED TODAY (FROM REWORK ITEMS LIST)

TASK/ ACTIVITY	DATE ISSUED	DESCRIPTION	TASK/ACTIVITY	CORRECTIVE ACTION(S) TAKEN



DAILY CONTRACTOR QUALITY CONTROL REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

SAMPLING/TESTING PERFORMED:

TASK/ACTIVITY TESTED	SAMPLING/TEST PERFORMED	TEST RESULTS (PASS/FAIL/CRITERIA)

MATERIALS/EQUIPMENT INSPECTION (Materials received and inspected against specifications)

DESCRIPTION/QUANTITY/VOLUME/WEIGHT	MAKE/MODEL/MANUFACTURER	MATERIAL LOT NUMBER	INSPECTION PERFORMED BY

SUBMITTALS INSPECTION / REVIEW:

SUBMITTAL NO	SUBMITTAL DESCRIPTION	SPEC/PLAN REFERENCE	SUBMITTAL APPROVED?	COMMENT/REASON/ACTION
			YES <input type="checkbox"/> NO <input type="checkbox"/>	
			YES <input type="checkbox"/> NO <input type="checkbox"/>	
			YES <input type="checkbox"/> NO <input type="checkbox"/>	
			YES <input type="checkbox"/> NO <input type="checkbox"/>	

LIST OF ATTACHMENTS (examples, as applicable: preparatory phase checklist, QC meeting minutes, safety meeting minutes, crane inspections, crane operation checklist, COCs, weight tickets, manifests, profiles, rework item list, testing plan and log, etc.):

On behalf of the contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report.

PREPARER'S SIGNATURE

DATE

Form A.12 Waste Tracking Log

[illegible]

FORM A.13: SAMPLING AND TESTING LOG									
USEPA Region 5 Construction Quality Assurance Plan Old American Zinc Superfund Site Remedial Action East Saint Louis, IL									
Line No.	Reference	Test Required	Date Sampled	Sampled By	Tested By	Location of Test (on-site/ off-site)	Frequency	Date Test Completed	Remarks

FORM A.13: SAMPLING AND TESTING LOG

USEPA Region 5
Construction Quality Assurance Plan
Old American Zinc Superfund Site Remedial Action
East Saint Louis, IL

Line No.	Reference	Test Required	Date Sampled	Sampled By	Tested By	Location of Test (on-site/ off-site)	Frequency	Date Test Completed	Remarks

<div>Field Critical Inspection Log</div>		<div><div>ch2m</div><div>Old American Zinc Residential Area Remediation</div><div>Project No.:</div></div>						
		<div>Property Addresses and Date Remedial Action Completed ([✓] inspection passed)</div>						
Onsite Daily Inspection Activities							Issues (Y/N)	Comments
1	Hold brief property-specific Tailgate meeting to identify potential changing hazards and reiterate excavation strategy for all personnel.							
2	Verify that utilities have been identified and marked prior to beginning excavation on each property.							
3	Verify that two points of continuous access can be maintained for residents when possible, with a one-point continuous access all the time.							
4	Document pre-existing conditions with photos paying particular attention to areas which could be damaged by construction. Record on Photo Log.							
5	Observe that residences and businesses are not cut off from vehicular traffic, unless special arrangements have been made and approved by the Contractor.							
6	Observe that underground pipe, conduits, drains, and other underground utility construction uncovered or otherwise affected by construction operations are protected, shored, braced, supported, and maintained.							
7	Observe that fire hydrants and water control valves are free from obstruction and available for use at all times.							
8	Observe that construction material, pavement, concrete, earth, volatile and corrosive wastes, and other debris do not enter sewers, pump stations, or other sewer structures.							
9	Observe that the erosion control measures are installed at the residential properties, alleyways, and at the Soil Staging Pile according to best management practices and the Stormwater Pollution Prevention Plan (SWPPP).							
10	Observe that barricades are used as required by the Vehicle Code and in sufficient quantity to safeguard public and the Work.							
11	Observe that earthwork and trucking operations are conducted to minimize dust and adhere to applicable environmental regulations for dust prevention.							
12	Observe that construction equipment is only operated between the hours of 7:00 a.m. and 6:00 p.m., or hours approved by the City.							
14	Observe that street closings or restrictions comply with Laws and Regulations and with written permission of proper authority.							
15	Observe that the work is conducted in such a way that interferes as little as possible with public travel, whether vehicular or pedestrian.							
16	Observe that the mailboxes are moved to temporary locations accessible to Postal Services.							
17	Observe that water control systems of sufficient size and capacity are provided, operated, and maintained to limit water collection in excavations and permit backfilled to final grade.							
18	Observe that excavation water is discharged, only as approved and if removed from above an impervious liner, in a manner that will not cause contamination, erosion, or flooding, or otherwise damage existing facilities, completed Work, or adjacent property. All contact excavation water is to be contained and sent offsite to an approved treatment facility for treatment and disposal at the direction of the Contractor.							
19	Observe that field equipment that has come into contact with any potentially contaminated material is decontaminated before leaving the site.							
20	Observe that all field equipment, temporary facilities, and other miscellaneous items (for example, barricades, caution tapes, and signs) resulting from or used during field operations are removed and properly disposed of offsite prior to demobilization.							
21	Observe that excavation areas are surveyed to establish preconstruction control points and existing elevations.							
22	Observe that the site preparation shall include protection of active migratory bird nests, trees, shrubs, vegetations or permanent structures and removal of encumbrances to soil excavation.							

Field Critical Inspection Log		<div>ch2mSM</div> <div>Old American Zinc Residential Area Remediation</div> <div>Project No.:</div> <div>Property Addresses and Date Remedial Action Completed ([✓] inspection passed)</div>						
		Onsite Daily Inspection Activities						
							Issues (Y/N)	Comments
23	Observe that an orange plastic construction barrier fence, minimum 36-inch height, shall be installed around the excavation and work areas using steel "T" post spaced at 6-foot centers to separate pedestrian traffic from the work. The fence will be secured around open excavations before the end of each work day.							
25	Observe that stormwater runoff control is installed, and erosion controls in place at the residential properites, alleyways and the Soil Staging Pile according to the Stormwater Pollution Prevention Plan (SWPPP) and best management practices prior to excavation. Stormwater runoff controls shall, at a minimum, prevent migration to storm sewers, street gutters, streets, sidewalks, and driveways. Observe that an at least 6-mil polyethylene black cover, or approved equivalent, per the Specifications is secured in the excavation prior to rain events.							
26	Observe that obstructions, including outdoor play equipment, benches, and other encumbrances to soil excavation, shall be tagged and removed from the property or relocated to an area of property unaffected by Work.							
27	Observe that obstructions removed from the property are securely stored and returned upon completion of restoration.							
28	Observe that ¾ inch plywood, or approved equivalent, shall be placed on the ground surface if small equipment will travel through the tree drip-line to access the excavation area. The plywood shall be secured to the ground to prevent its movement.							
29	Observe that the Subcontractor has contacted JULIE and uses a third-party utility locating service to identify utilities before work begins at each property or alleyway. The Subcontractor verify the completion of the locates and submit documentation to Contractor a minimum of 3 days prior to beginning any invasive activities at each property.							
30	Observe that the Subcontractor records the location of the utilities on the property sketch for permanent documentation.							
31	Observe that construction equipment noise is below the noise thresholds in 35 IAC Part 901.102 and Part 901.104 and is only operated between the hours of 7:00 a.m. and 6:00 p.m., or hours approved by the City.							
32	Observe that appropriate excavation methods are determined on a property-specific basis. Earthwork Subcontractor shall determine the method(s) to access and excavate the properties in accordance with the specifications.							
33	Observe that the over-excavation tolerance is plus 0.1 foot, and under-excavation tolerance is minus 0.0 foot. Contractor may limit the depth of excavation if it is believed that further excavation may result in damage to structures or safety hazards.							
34	Observe that the limits of construction for soil excavation are as follows: One (1) foot away from permanent structures and fences and sloping away from the structure at a maximum slope of 1 horizontal to 1 vertical. One (1) foot away from property lines unless the excavation continues onto the neighboring property and the adjacent Property Owner has provided access. Excavation may proceed across a property line into a right-of-way if it serves as part of that yard. When the Earthwork Subcontractor is satisfied that an excavation is to the specified lines and grades, the Contractor will collect confirmation samples in accordance with Sampling Strategies and Statistics Training Materials for IAC TACO residential criteria. After sample collection, Contractor will authorize the Earthwork Subcontractor to proceed with backfilling of the excavation.							
35	Observe that adequate controls are in place to avoid unauthorized over-excavation.							
36	Observe that the Earthwork subcontractor immediately notifies Contractor if latent differing site conditions are encountered during construction. Such conditions include french drains, drain tile, unknown electrical and plumbing lines, and other similar conditions							

<div>Field Critical Inspection Log</div>		<div><div><div>ch2m</div><div>SM</div></div><div>Old American Zinc Residential Area Remediation</div><div>Project No.:</div></div> <div>Property Addresses and Date Remedial Action Completed ([✓] inspection passed)</div>						
Onsite Daily Inspection Activities							Issues (Y/N)	Comments
37	Observe that the manual excavation shall be performed around tree roots as specified below: Within 8 feet of the tree trunk, excavation shall be limited to manual excavation. Manual excavation shall expose and tunnel under woody roots 1 inch in diameter or greater to preserve the roots. Manual excavation shall follow the roots 1 inch in diameter or greater to the horizontal extent of the excavation to expose the roots. At a distance greater than 8 feet from the trunk, mechanical excavation shall be allowed using a mini excavator, or approved equivalent, and spotter to remove soils between 1 inch diameter or larger roots exposed by manual excavation. If roots are damaged, Subcontractor shall perform corrective pruning to create a clean cut and promote quick wound closure and regeneration.							
38	Observe that trees and plantings that are not being removed are protected and appropriate measures are taken when excavating around the plants, including avoiding or minimizing damage to roots systems.							
39	Observe that Subcontractor provides and maintains temporary barricades around trees.							
40	Observe that the Subcontractor employs manual excavation as specified to minimize tree injury.							
41	Observe that the exposed roots are temporarily covered with wet burlap, and the burlap moist is maintained until soil is replaced around roots.							
42	Observe that the vegetation is watered, as necessary, to maintain health.							
43	Observe that the materials are not stockpiled or permit traffic within drip lines of trees.							
44	Observe that in event of damage to bark, trunks, limbs, or roots of plants that are not designated for removal, treat damage by corrective pruning, bark tracing, application of a heavy coating of tree paint, and other accepted horticultural and tree surgery practices.							
45	Observe that the Subcontractor performs work as outlined in the approved Transportation and Disposal Plan.							
46	Observe that stockpiled excavated material is covered and protected during inclement weather.							
47	Observe that the excavated materials shall not be stockpiled overnight except in the approved Soil Staging Pile with proper controls in place.							
48	Observe that the stockpiled and staging pile materials are identified by clearly worded, visible from all directions and readable sign posts.							
49	Observe that the temporary stockpiles are removed before the end of construction activities each day.							
50	Observe that the excavated materials are not stockpiled near or over existing utilities, facilities, adjacent property, or completed Work, or within the tree drip line.							
51	Observe that the protection against stockpile runoff is implemented in accordance with the approved SWPPP.							
52	Observe that manual excavation is performed within 18 inches of approximate underground utility markings to verify actual location of the utility.							
53	Observe that manual excavation is performed within the drip line.							
54	Observe that specified lines and grades and sampling and analysis indicate extents of excavation have been reached prior to authorizing backfilling of the excavation.							
56	Observe that the trucks are fully loaded, within allowable hauling weight limits, prior to transporting the excavated materials.							
57	Observe that a temporary ground covering, 6 mil polyethylene or equivalent, extends a minimum of 2 feet under trucks to minimize the potential for soil to spill into roadways or other areas not requiring remediation.							
58	Observe that a temporary ground covering, 6 mil polyethylene or equivalent, extends over sidewalks, driveways or similar surfaces adjacent to excavations from the start of excavation through the completion of backfill to minimize the potential tracking of soil. Soil spilled onto these surfaces shall be removed using dry decontamination methods.							

<div>Field Critical Inspection Log</div>		<div><div>ch2m</div><div>Old American Zinc Residential Area Remediation</div><div>Project No.:</div></div>						
		<div>Property Addresses and Date</div> <div>Remedial Action Completed ([✓] inspection passed)</div>						
Onsite Daily Inspection Activities							Issues (Y/N)	Comments
59	Observe that street cleaning is performed daily from the start of excavation through completion of backfill. Observe that a final street cleaning is performed prior to the removal of temporary erosion control measures.							
60	Observe that all moving, handling, and loading of excavated material, along with sequencing the activities is in accordance with the Subcontractor's Transportation and Disposal Plan.							
61	Observe that the exterior of each transportation vehicle and load of waste is visually inspected and all loose soil/material removed and collected before leaving the site.							
62	Observe that each truckload is covered with a fully functioning tarp system that satisfies local, county, state and federal regulations before leaving the site and during transportation.							
63	Observe that the transportation of nonhazardous wastes is completed by a transporter licensed for commercial transportation of Special Waste in the State of Illinois.							
64	Observe that the quantities of waste disposed of offsite is recorded by documented weighing at the approved disposal facility. Copies of haul tickets shall be signed and provided to Contractor on a daily basis.							
65	Observe that the quantities of waste staged in the Soil Staging Pile are estimated and documented per property in the Waste Tracking Log. Copies of the Waste Tracking Log will be provided to Contractor on a daily basis.							
66	Observe that the Subcontractor complies with the following procedures when transporting wastes offsite and to Soil Staging Pile: Transporting waste materials shall comply with requirements of federal, state and local regulations. Minimize impacts to general public traffic. Repair road damage caused by construction and/or hauling traffic. Clean up material spilled in transit. Follow safety and spill response procedures. Use sealed trucks transporting liquids or wet materials. No materials from other projects shall be combined with materials from this site. Comply with approved Transportation and Disposal Plan.							
67	Observe that the site restoration includes the installation and inspection of erosion control blanket over topsoil in the excavation areas							
68	Observe that work does not commence until the Contractor has approved materials and methods proposed for restoration.							
69	Observe testing of existing systems in or near excavation areas, such as irrigation systems, electrical, plumbing, or others to verify proper function.							
70	Observe that the Subcontractor reinstalls removed obstructions, repairs damage to permanent structures, and repair or replacement of property disturbed or damaged during or as a result of the Subcontractor's construction activities.							
71	Observe that temporary controls are removed with the exception of erosion control blankets.							
72	Observe that the Subcontractor reinstalls landscaping features or other obstructions removed from the area. Materials will be reinstalled to an equivalent or better condition.							
73	Observe that the Subcontractor will return items to the property from storage area after reinstallation of removed fencing sections. Any items damaged by the Subcontractor must be repaired or replaced as directed by Contractor. The condition of equipment and materials prior to removal from the property will be based on photographic and video documentation.							
74	Observe that the Subcontractor repairs damage to private property, including but not limited to, fencing, private utilities, and permanent structures, in accordance with manufacturer's instructions, local codes and ordinances, and other applicable regulations and as approved by the Contractor.							
75	Observe that repairs are performed to an equivalent or better quality than the original. Repairs will be made with like-kind materials with matching finishes as possible.							

<div>Field Critical Inspection Log</div>		<div><div>ch2m</div><div>Old American Zinc Residential Area Remediation</div><div>Project No.:</div><div>Property Addresses and Date Remedial Action Completed ([✓] inspection passed)</div></div>						
Onsite Daily Inspection Activities							Issues (Y/N)	Comments
76	Observe that the Subcontractor repair sidewalks, curb and gutter, trees or other City property damaged by the Subcontractor or as a result of their construction activities. Repairs will be performed in accordance with the Illinois Department of Transportation (IDOT) Standard Specifications for Construction, St. Clair County, Canteen Township, and/or City of Washington Park, Fairmont City, and/or City of St. Louis Code of Ordinances, or other applicable ordinances or regulations.							
77	Observe that the applicable utilities are notified if damage occurs during the Work.							
78	Observe that sod is placed on the specified areas within 24 hours after topsoil preparation.							
79	Observe that the blankets are rolled out or laid in parallel to the direction of water flow (if applicable), with the netting on top.							
80	Observe that the blankets are spread evenly without stretching, and so the fibers are in direct contact with the soil over the entire area.							
81	Observe that the adjacent strip edges are overlapping each other at least 102 mm (4 inches). Strip ends shall overlap each other at least 178 mm (7 inches). A minimum of 1 staple per square meter shall be inserted flush with the ground surface to anchor to the soil surface.							
82	Observe that the leading edge at top of slope in a 6-inch by 6-inch trench for steep slopes and ditches is buried to prevent water from getting under the mat.							
83	Observe that the temporary controls are removed from the residential property after topsoil preparation is complete, erosion control blanket has been installed, and other property features have been restored.							
84	Observe that the erosion control measures, such as inlet protection, shall be removed from the residential area by the Subcontractor after the final street cleaning is performed in accordance with specification 01 50 00.							
85	Observe that erosion control measures will remain in place at the Soil Staging Pile after completion of RA activities in the surrounding properties, which will be maintained and inspected by the EPA after demobilization.							
86	Observe that debris, rubbish and excess materials are removed from the property for storage at the staging area or disposal, as appropriate. Local regulations regarding hauling and disposal shall apply.							
87	Observe that topsoil is not placed when subsoil or topsoil is frozen, excessively wet, or otherwise detrimental to the Work.							
88	Observe that the topsoil is not placed on subsoil with standing water or unstable subgrade conditions. Topsoil shall be placed in a manner that does not disturb or damage surrounding structures or utilities.							
89	Observe that General Fill is compacted to 85 to 95 percent relative compaction as determined in accordance with ASTM D698.							
90	Observe that Gravel Fill is placed compacted in accordance with the IDOT Standard Specifications for Road and Bridge Construction.							
91	Observe that topsoil is fine graded to eliminate rough or low areas and maintain levels, profiles, and contours of subgrade to within +0.1 foot of final grade.							
92	Observe that stones exceeding 1 inches, roots, sticks, debris, and foreign matter are removed during and after topsoil placement.							



Photo Log

[illegible]



MONTHLY PROGRESS REPORT

DATE: _____

PROJECT: _____ PROJECT NO: _____

SUBCONTRACTOR: _____

SUBCONTRACT AMOUNT: _____ AMOUNT THIS PERIOD: _____

AMOUNT TO DATE: _____ % COMPLETE: _____

WORK PROGRESS

Current:

Projected:

Delivery Problems and/or Delays. Corrective Action Taken:

Potential Modifications:

Potential Claims:

CH2M HILL, Inc.

Attachment B Submittal Register

Submittal Register

[illegible]

Attachment C
Change Management Tracking Log

Old American Zinc

USEPA - Region 5

Task	Scope Change	Cost	Estimated Budget Impacts (Revenue)	Schedule Impacts	Communicated (date)
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[illegible]

Attachment D

Air Monitoring Plan

Air Monitoring Plan: Old American Zinc Residential Soil Contamination Site

1.1.1 Arsenic/Cadmium/Lead/Zinc and Total Particulate Air Sampling Plan

Personal and perimeter air sampling for arsenic/cadmium/lead/zinc will be performed during upcoming excavation activities at the Old American Zinc Residential Soil Contamination Site. All integrated samples will be collected and analyzed in accordance with the National Institute of Occupational Safety and Health (NIOSH) Method 7300 or equivalent for elements (arsenic, cadmium, lead, and zinc) by inductively coupled plasma (ICP), and analyzed by a laboratory that is accredited by the American Industrial Hygiene Association for that method. Real-time perimeter dust monitoring shall also be performed with action levels based on maximum concentrations of contaminants for conservative action levels.

Personal samples will be collected from site personnel. The contractor is responsible to collect personal samples from contractor staff and to perform perimeter monitoring at residential properties and the Facility Area (FA) soil staging pile during excavation activities as required by this sampling plan, health and safety plans (owner representative's and contractor's), and any applicable federal, state, or local regulations. The contractor is responsible to perform real-time dust monitoring during intrusive activities at the property and FA soil staging pile, beginning with excavation and continuing through backfill and topsoil placement.

1.1.2 Personal Air Sampling

1.1.2.1 Sampling Approach

A personal air sample will be collected for a worker with the greatest potential exposures during the excavation activities for each property during the first week of excavation activities. It is anticipated that a 24-hour turnaround on the laboratory analysis of these samples will be obtained.

Based on the results of the first week of personal air sampling, the sampling plan will be reviewed to evaluate the effectiveness of the monitoring for the remainder of the field event. If an action level is reached for any compound, monitoring will continue at first-week levels. Factors that will be considered include, but are not limited to, the following: (1) results of the first round of personal air sampling, (2) level of soil contamination anticipated in future excavations based on previous soil sampling data, (3) soil conditions (wetness) anticipated, (4) level of work activity anticipated, and (5) correlation of real-time dust monitoring (see below) with actual personal air sampling results obtained.

1.1.2.2 Sampling Method

Personal air samples will be collected in accordance with NIOSH Method 7300 or equivalents using a 0.8-micrometer cellulose ester membrane filter. A calibrated sampling pump will be used to draw a representative air sample from the breathing zone of the employee through the filter and collect particulate on the filter. The calibrated sampling pumps will sample within ± 5 percent of the recommended flow rate of 1 to 4 liters per minute. Sample collection time and volume will be in accordance with referenced NIOSH method.

1.1.3 Perimeter Air Sampling

1.1.3.1 Sampling Approach

Daily perimeter air samples for arsenic, cadmium, lead, and zinc, and specifically lead will be collected at two locations per property. At the FA soil staging pile, two perimeter air samples shall also be collected daily throughout the excavation activities. The two sampling locations at residential properties and FA soil staging

pile will be selected to evaluate both ambient (i.e., upwind) and downwind levels. The samples will be collected in accordance with NIOSH Methods 7303 (Elements by ICP) and 7105 (Lead by GFAAS) by drawing a known volume of the air through a 0.8-micrometer mixed-cellulose ester filter and collect particulate on the filter using a calibrated personal sampling pump. The calibrated sampling pumps will sample within ± 5 percent of the recommended flow rate of 1 to 4 liters per minute. Samples will be collected for an 8-hour period or a full-shift period, resulting in a total air volume of approximately 320 liters. Tygon or other flexible tubing will be used for connecting to the pumps. Samples would be handled under standard chain-of-custody procedures for laboratory analysis. The quickest laboratory turnaround time for results shall be confirmed and used.

1.1.4 Real-time Perimeter Dust Monitoring

1.1.4.1 Sampling Approach

Real-time dust monitoring will be performed using MIE DataRAM 4000 dust monitors, or equivalent, throughout the duration of intrusive activities beginning with excavation and continuing through backfill and topsoil placement at each residential property and the FA staging pile site(s) at the Old American Zinc Plant Site. Each day, a DataRAM will be placed in a location representative of possible worst-case exposure potential for employees and at a location to verify effectiveness of engineering controls in minimizing dust generation that may potentially leave the exclusion zone at the construction activities at the discretion of the site coordinator. Perimeter particulate monitoring would have DataRAM alarm set at 0.50 milligrams per cubic meter, and at no time would exceed 1.0 milligrams per cubic meter. The subcontractor will record the DataRAM readings every minute and personnel will check readings every 30 minutes, along with a brief description of the activity taking place. Additionally, the DataRAM results will be downloaded each day so that the fluctuations in total dust concentrations can be observed.

1.1.5 Notification of Personal and Perimeter Air Monitoring Results

The analytical laboratory will submit sample results directly to each subcontractor for each of their personnel included in this air sampling program. The earthwork subcontractor shall comply with Occupational Safety and Health Administration standards 1910.120 and 1910.1026 regarding employee notification and recordkeeping requirement and will provide CH2M with a weekly summary of results and real-time notification of any exceedances.

1.1.6 Recordkeeping

Documentation of air monitoring and air sampling must be retained as part of the project file, which includes the following:

- Calibration and industrial hygiene sampling logs
- Instrument reading
- Weather conditions
- Sample location (breathing zone, headspace) and upwind and downwind locations at residential properties and the FA
- Operator's name and signature
- Date and time of the samples, copies of chain of custody forms
- NIOSH methods used
- Laboratory analysis reports
- Copies of personnel notifications of results

Appendix D
Engineer's Estimate of
Construction Cost

Prefinal Basis of Estimate Old American Zinc Plant Superfund Site— Surrounding Properties Remedial Design

Fairmont City, St. Clair County, Illinois

EPA WA No. 224-RDRD-B5A1

Contract No. EP-S5-06-01



Project Name: Old American Zinc Plant Superfund Site – Surrounding Properties

Class Estimate: Class 2 Project Budget Estimate

Project Manager: Rachel Grand/STL

Senior Technical Consultant: Dan Plomb/MKE

Estimated By: Mark Allen/DEN

Estimate Date: May 3, 2018

1.1 Purpose of Estimate

This prefinal basis of estimate is included as Appendix D to the *Prefinal Basis of Design Report for Old American Zinc Plant Superfund Site, Fairmont City, St. Clair County, Illinois, Surrounding Properties* (CH2M 2018) and should only be viewed in conjunction with the prefinal basis of design report. This budget estimate provides an engineer's estimate of budgetary costs for the excavation, backfill, and restoration of 75 properties and 10 alleyways in the properties surrounding the Facility Area (FA). Assumptions that apply to this estimate are outlined in the following sections.

This Basis of Estimate should be reviewed in conjunction with the Microsoft Excel spreadsheet (Attachment A) that outlines the anticipated costs for the project.

1.2 General Project Description

The Old American Zinc (OAZ) Plant Superfund Site is located in the Village of Fairmont City in St. Clair County, Illinois. The site includes a 132-acre FA and surrounding properties where elevated metal concentrations associated with the facility operation were found in different media. The FA is bordered by several commercial and industrial properties, including Garcia Trucking to the west, CSX Intermodal railroad yard to the south, and General Chemicals to the east. The site also includes properties near the FA (surrounding properties), primarily in Fairmont City.

OAZ conducted zinc-smelting operations at the site from 1916 to 1967. Slag from the smelting operation was cooled by placing the molten material along the northern and western boundary of the FA. The slag stock piles originally encompassed an area of 15 acres. The site, including the clinker and other smelting residues on the property, was purchased by XTRA Intermodal, Inc. (XTRA), in 1979. XTRA operated a trucking terminal at the site until 2003 that included lease, storage, and maintenance of a diverse fleet of trailers. XTRA ground and redistributed the slag stockpiles on the FA to buildup and level the former plant site to facilitate its trucking operation. At present, redistributed slag on the FA covers an area of 125 acres, with thickness ranging from 6 inches to 9 feet (ENTACT 2012).

Remedial activities for the OAZ Plant Superfund Site will occur in several phases spanning many years. The cost estimate described herein is for the surrounding properties remedial action only. Samples collected during the remedial investigation conducted by ENTACT in 2008-2009 and predesign sampling activities conducted by CH2M in 2017 indicate that over 100 properties and 15 alleyways exceeded the cleanup levels for at least one contaminant of concern. Properties and alleyways with elevated lead concentrations were prioritized for removal action, and are not included in this design. Seventy-five properties and 10 alleyways requiring remediation are included in this design and cost estimate.

1.3 Project Objective

EPA's selected remedy for the site is Alternative 4A, as described in the Record of Decision (EPA 2012). The overall strategy for the site is to contain and cover the low-level-threat waste to reduce future human health and ecological risk to acceptable levels.

The remedial action will be performed by EPA's (Owner's) representative and a primary contractor. There will also be supporting contracts for laboratory analysis, waste disposal, etc. This basis of estimate was created based on following major activities:

- Mobilization
- Site preparation
- Excavation of soil above applicable cleanup levels from off-FA properties

- Transportation of excavated soils to the excavated soil staging pile at the FA (soil staging pile), and inspection and maintenance of the soil staging pile
- Containerizing decontamination liquids and water that accumulates in unlined excavations for waste characterization and offsite disposal
- Surveying
- Backfill and compaction
- Site restoration and maintenance
- Demobilization

1.4 Administration/Subcontractor Oversight

This budget estimate assumes that, in addition to the contractor cost shown on the Class 2 Cost Estimate Summary, administration and oversight by the Owner’s representative will be necessary. The administration and contractor oversight cost percentage has been estimated based on the EPA 2000 Cost Guidance (EPA 2000) document, Region 5 contract, and site experience executing similar work at other residential RA projects.

1.5 Assumptions

This estimate is based on the quantities, sizes, and calculations presented in the *Prefinal Basis of Design Report for Old American Zinc Plant Superfund Site, Fairmont City, St. Clair County, Illinois, Surrounding Properties* (CH2M 2018). Section 3.1 of the final basis of design report presents key design assumptions, as well as quantity assumptions. The following exclusions and assumptions supplement Section 3.1 of the basis of design report and are presented as conditions for the attached budget estimate:

- The estimate is based on 2018 pricing. A detailed schedule has not been developed at this time because remedial action activities require review and a start determination from EPA.
- Drawings used for this estimate were prepared by CH2M (engineer; basis of design report, Appendix A).
- This budget estimate is not an offer to contract for and/or procure the work but does represent the engineer’s best opinion of cost before bidding documents are developed and released to prospective contractors.
- The budget cost estimate does not include cost allowance for unforeseen site conditions.

1.6 Overall Costs

The following is a summary breakdown of the costs. See Attachment A for additional detailed information.

Low Range	ESTIMATE RANGE	High Range
-15%	Total \$	+20%
\$4,588,200	\$5,397,900	\$6,477,500

1.7 Cost Factors

The following cost factors were applied to the estimate:

Estimate Contingency	15%
Bond/Insurance	2.50%
Owner's Representative Markup	5%
Administration and Contractor Oversight	25%

Attachment A contains the detailed budget estimate.

1.8 Estimate Classification

This budget estimate is considered a Class 2 estimate as defined by AACE International. It is considered accurate to -15%/+20% based on the current level of the design documents.

The budget estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final cost of the project will depend upon competitive market conditions, implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein.

1.9 Cost Resources

The following is a list of the various cost resources used in the development of the rough order of magnitude estimate:

- CH2M engineers' estimate with assumptions as noted in supporting tables.
- RSMeans 2018 Heavy Construction Cost Data as noted in the budget estimate.
- Estimator judgment and experience.
- Quantity takeoff of anticipated activities.
- Quantities have been priced using a detailed built-up approach. Crews were built up using Davis-Bacon labor rates for St. Clair County, Illinois. Construction equipment was based on 2018 Blue Book rental/cost recovery rates for Illinois. Materials were based on budgetary quotations.
- Production rates were based on the CH2M estimator's experience. Other items were based on RSMeans Cost Data and bids received for recent similar work.
- The basic detailed level of the estimate is called the Direct Cost Report.
- The Direct Cost Report is broken down by bid item and activities that are different items of work required to execute the project. Each activity is estimated on a direct cost basis as either a detailed level of effort method or a lump sum unit price method. Activities contain all resources, including labor hours, equipment, materials, and services, to accomplish that activity.

Resources used are coded as follows:

- Craft Labor is coded with an "alpha" prefix. For example, LGEN corresponds to "Laborer, General." These rates are per Davis-Bacon labor rates for St. Clair County, Illinois, and include fringe benefits, payroll taxes, and insurance.

- Resources coded with a “2” prefix are permanent material.
- Resources coded with a “3” prefix are construction expenses.
- Resources coded with a “4” prefix are for subcontractor costs. These costs are based on budgetary quotations or from information from recent CH2M projects.
- Resources coded with a “5” prefix are costs which represent potential consultant costs such as project management, Construction Management or Engineering.
- Resources coded with an “8” prefix are construction equipment based on Rental Rate Blue Book.
- Costs for each activity are summarized on the report titled “Activity Summary Report.” This report summarizes “activities” into “Bid Items,” which correspond to what CH2M might propose as pay items.

Oversight labor unit prices reflect a burdened rate, including the following: workers compensation, unemployment taxes, Fringe Benefits, and medical insurance.

1.10 Estimate Methodology

This cost estimate is considered a bottom rolled-up type of estimate with detailed direct cost breakdown of labor, materials, and equipment. Non-binding cost quotations for materials and services were obtained when possible. Estimator judgment and experience were used to price materials and services whenever non-binding cost quotations were not available. The estimate may include allowance cost for certain components of the estimate (that is, weather delays, production restraints, etc.).

1.11 Labor Costs

This budget estimate is based upon current local knowledge of construction labor rates. Labor costs were estimated using Davis-Bacon labor rates for St. Clair County, Illinois.

1.12 Sales Tax

This budget estimate does not include sales tax separately; cost for applicable sales tax is included in the individual line items.

1.13 Works Cited

CH2M HILL Engineers, Inc. (CH2M). 2018. *Prefinal Basis of Design Report for Old American Zinc Plant Superfund Site, Fairmont City, St. Clair County, Illinois, Surrounding Properties*. May.

ENTACT. 2012. *Final Feasibility Study Document for the Old American Zinc Plant Site, Fairmont City, Illinois*. February.

U.S. Environmental Protection Agency (EPA). 2012. *Record of Decision, Old American Zinc Plant Superfund Site*. September.

U.S. Environmental Protection Agency (EPA). 2000. *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*. July.

Attachment A Budget Estimate

Appendix D. Unit Rates for Anticipated Property Excavation, with Transportation and Staging of Material at the Facility Area
Old American Zinc Plant Superfund Site Surrounding Properties
St. Clair County, Illinois

Item	Qty	Unit	Unit Price	Total	Notes
Pre-construction Activities	1	LS	\$ 21,300	\$ 21,300	Work Plan, HASP/AHAs, Schedule, Training, premobilization submittals, performing initial borrow source sampling.
Coordination Meeting	1	LS	\$ 2,500	\$ 2,500	Coordination meeting with city, county, and township representatives.
Mobilization	1	LS	\$ 50,400	\$ 50,400	Mobilize and demobilize equipment and materials to site and prepare staging areas. Document existing condition of haul routes with photos and videos.
Setup Facilities	1	LS	\$ 50,600	\$ 50,600	Setup construction trailer, temporary SESC measures, facilities, stockpile areas, parking areas.
Community Relations, three (3) mtgs	1	LS	\$ 5,700	\$ 5,700	Assume three (3) public meetings throughout the course of construction. Each meeting included labor for preparation and attendance.
Air Monitoring	165	DY	\$ 383	\$ 63,117	Labor, equipment, and materials to conduct air monitoring at residential properties and the FA, throughout the project construction.
Initial Preconstruction Meeting	76	EA	\$ 560	\$ 42,560	Document existing property condition with digital photos and videos. Attendees include owner's representative, contractor, and landscaping subcontractor to prepare plant inventory.
Second Preconstruction Meeting	75	EA	\$ 290	\$ 21,750	Document Property Owner approval of the work to be performed. Attendees include owner's representative, contractor, and landscaping subcontractor to prepare plant inventory.
Utility Locates	85	EA	\$ 260	\$ 22,100	Utility locates for properties and alleyways.
Clearing and Site Preparation at Properties	75	EA	\$ 1,000	\$ 75,000	Clear & Grub grasses and root systems, removal of trash, debris, shrubs, swing sets, benches, and other obstructions.
T&D Yard Waste - Mixed	40	TN	\$ 40	\$ 1,600	T&D of trees, shrubs, miscellaneous wood, metal, and debris. Assume 0.5 ton per property.
Survey#1 - Preconstruction Survey	85	EA	\$ 410	\$ 34,850	Establish a minimum 10 by-10 foot grid and then use a level and rod to measure pre-excavation elevations. Surveys will be conducted by an Illinois-licensed surveyor.
Tree Removal (2"-4" dia)	7	EA	\$ 810	\$ 5,670	Based on actual costs incurred on a similar project (USS Lead).
Stump Grinding	2	EA	\$ 2,100	\$ 4,200	Based on actual costs incurred on a similar project (USS Lead).
Tree Removal (4"-12" dia)	10	EA	\$ 2,700	\$ 27,000	Based on actual costs incurred on a similar project (USS Lead).
Tree Removal (12"-30" dia)	37	EA	\$ 4,200	\$ 155,400	Based on actual costs incurred on a similar project (USS Lead).
Tree Removal (>30" dia)	14	EA	\$ 6,100	\$ 85,400	Based on actual costs incurred on a similar project (USS Lead).
Excavation	13,660	BCY	\$ 63	\$ 863,175	Excavation with a small excavator and some by hand. Signage and protective measures for pedestrian traffic on sidewalks or streets, as required. SESC measures as required.
Demarcation Fabric	68,175	SF	\$ 1	\$ 83,174	High visibility fencing for excavations completed to maximum sample depth.
Survey No. 2 - Post Excavation Survey	85	EA	\$ 410	\$ 34,850	Establish a minimum 10 by-10 foot grid and then use a level and rod to measure post-excavation elevations. Surveys will be conducted by an Illinois-licensed surveyor.
Transport Material to Facility	19,124	TN	\$ 5	\$ 88,353	Transportation of soil to the Facility Area. Conversion from BCY to TN based on what is being seen on other similar projects in the region.
Stockpile Management	1	LS	\$ 120,900	\$ 120,900	Labor, equipment and materials to shape/compact stockpile and daily removal/placement of poly sheeting on working face.
Stabilize Stockpile	1	LS	\$ 139,700	\$ 139,700	Assumes 3 acre footprint, covered with 4-in of topsoil and seeding of completed section of stockpile approximately every 60-days. Assume 4 events (to cover entire 3 acres).
Backfill - General	6,597	BCY	\$ 50	\$ 329,850	Includes assistance with QA/QC sampling, purchase/delivery, installation, compaction, and density testing of general backfill (sand).
Backfill - Topsoil	5,973	BCY	\$ 60	\$ 358,380	Includes assistance with QA/QC sampling, purchase/delivery, and installation of topsoil.
Backfill - Select Topsoil	43	BCY	\$ 70	\$ 3,010	Includes assistance with QA/QC sampling, purchase/delivery, and installation of select topsoil (peat).
Backfill - CA-6 Aggregate	1,890	TN	\$ 50	\$ 94,500	Includes assistance with QA/QC sampling, purchase/delivery, installation, compaction, and density testing of gravel (IDOT CA-6).
Street Sweeping	7	MO	\$ 5,600	\$ 39,200	Performed from start of excavation through topsoil placement.
Survey No. 3 - Post Backfill Survey	85	EA	\$ 410	\$ 34,850	Establish a minimum 10 by-10 foot grid and then use a level and rod to measure post-backfill elevations. Surveys will be conducted by an Illinois-licensed surveyor.
Landscape - Supply/Plant Perenials	100	EA	\$ 40	\$ 4,000	HCSS Estimate
Landscape - Supply/Plant Shrubs	82	EA	\$ 140	\$ 11,480	HCSS Estimate
Landscape - Supply/Plant Trees	68	EA	\$ 510	\$ 34,680	Based on RSMeans
Restoration - Sod Replacement and Maintenance	393	MSF	\$ 940	\$ 369,420	Includes 4-week maintenance/watering period for each property (for up to a total of 15 watering events per property).
Landscape Warranty/Replacement	1	LS	\$ 50,200	\$ 50,200	Allowance for sod and trees for replacement. Assume 12% of total landscaping/sod placement costs.
Restoration - Wood Mulch	1,200	SF	\$ 1	\$ 744	Placement in garden areas, 3-inches thick.
Restoration - Rock Mulch	10	CY	\$ 130	\$ 1,300	Placement in garden areas with existing rock mulch, 3-inches thick.
Restoration - Weed Block	2,200	SF	\$ 0.29	\$ 638	Place beneath wood mulch and rock mulch.
Restoration - Drain Tile Repair	5	EA	\$ 3,500	\$ 17,500	Allowance
Restoration - Concrete Repair	150	CY	\$ 540	\$ 81,000	Assume 10 feet of repair at each property where access will occur from/over sidewalk (assumed 30 properties). Assume 6-inches thick and 4.500 PSI
Restoration - Asphalt	5,000	SF	\$ 6	\$ 28,950	Restoration for Alley 19 and any damaged asphalt during backfill and restoration activities.
Fence Replacement - Chain Link	200	LF	\$ 30	\$ 6,000	Assume 3-inches thick. IDOT A-3 surface material.
Post Construction Meeting	75	EA	\$ 270	\$ 20,250	Assume 2 8-ft panels replaced at 15% of properties
Analytical Sampling	12	EA	\$ 1,200	\$ 14,400	Document issues identified during work, outstanding punchlist items, and substantial completion at the property. Attendees include owner's representative, contractor, and landscaping subcontractor to prepare plant inventory.
Demobilization	1	LS	\$ 34,100	\$ 34,100	Initial and QA/QC samples for general backfill, topsoil, etc.
Payment and Performance Bond	2.50%	of	\$ 3,533,800	\$ 88,300	
Contingency	15%	of	\$ 3,533,800	\$ 530,100	
				\$ 4,152,200	
Project Management/Construction Management					
Administration/Contractor Oversight	25%	of	\$ 4,152,200	\$ 1,038,100	CM and QA/QC Manager onsite, PM
Owner's Representative Markup	5%	of	\$ 4,152,200	\$ 207,600	per contract rates
Total Capital Cost:					
			\$	\$ 5,397,900	
CLASS 2 RANGE:			20%	\$ 6,477,500	
			-15%	\$ 4,588,200	

This construction cost estimate is not an offer for construction and/or project execution. The construction cost estimate for this Design is an Association for the Advancement of Cost Engineering (AACE) Class 2 estimate and is assumed to represent the actual total installed cost. The estimate above is considered control-level cost estimating, suitable for use in project budgeting and planning. This estimate has been prepared with partial design and engineering calculations. The level of accuracy for the class of estimate defines the upper and lower ranges of the cost estimate. It is based upon the level of design detail and uncertainty associate with that level of detail. For a Class 2 estimate, the accuracy range is +20% to -15%. It would appear prudent that internal budget allowances account for the highest cost indicated by this range as well as other site specific allowances. The cost estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Because of this, project feasibility and funding needs must be carefully reviewed prior to making specific financial decisions to help ensure proper project evaluation and adequate funding.

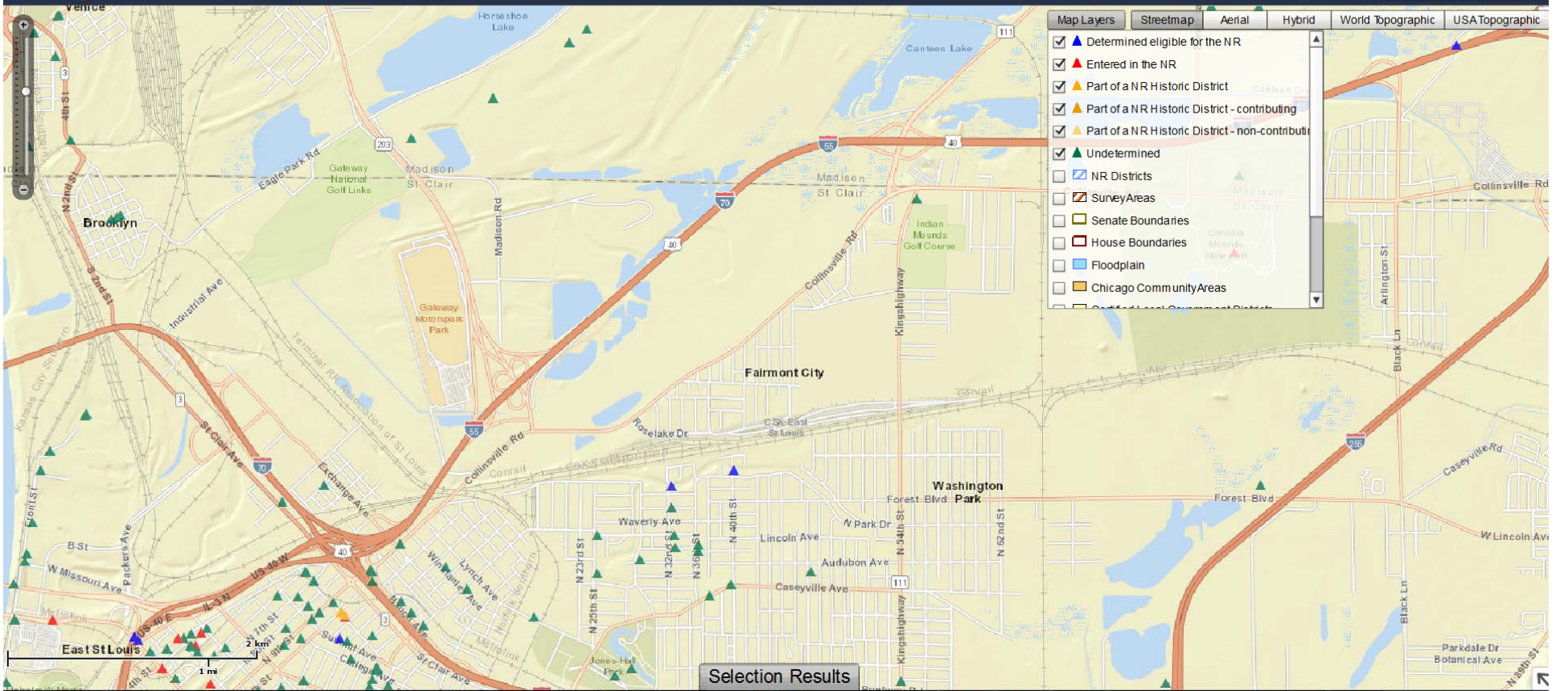
Appendix D. Unit Rates for Anticipated Property Excavation, with Transportation and Staging of Material at the Facility Area
Old American Zinc Plant Superfund Site Surrounding Properties
St. Clair County, Illinois

Item		Qty	Unit	Unit Price		Notes		
	Pre-construction Activities	1	LS	\$	21,342	\$	21,342	Work Plan, HASP/AHAS, Schedule, Training, premobilization submittals, performing initial borrow source sampling.
	Coordination Meeting	1	LS	\$	2,506	\$	2,506	Coordination meeting with city, county, and township representatives.
	Mobilization	1	LS	\$	50,392	\$	50,392	Mobilize and demobilize equipment and materials to site and prepare staging areas. Document existing condition of haul routes with photos and videos.
	Setup Facilities	1	LS	\$	50,643	\$	50,643	Setup construction trailer, temporary SESC measures, facilities, stockpile areas, parking areas.
	Community Relations, three (3) mtgs	1	LS	\$	5,691	\$	5,691	Assume three (3) public meetings throughout the course of construction. Each meeting included labor for preparation and attendance.
	Air Monitoring	165	DY	\$	383	\$	63,117	Labor, equipment, and materials to conduct air monitoring at residential properties and the FA, throughout the project construction.
	Initial Preconstruction Meeting	76	EA	\$	562	\$	42,749	Document existing property condition with digital photos and videos. Attendees include owner's representative, contractor, and landscaping subcontractor to prepare plant inventory.
	Second Preconstruction Meeting	75	EA	\$	291	\$	21,815	Document Property Owner approval of the work to be performed. Attendees include owner's representative, contractor, and landscaping subcontractor to prepare plant inventory.
	Utility Locates	85	EA	\$	260	\$	22,097	Utility locates for properties and alleyways.
	Clearing and Site Preparation at Properties	75	EA	\$	965	\$	72,369	Clear & Grub grasses and root systems, removal of trash, debris, shrubs, swing sets, benches, and other obstructions.
	T&D Yard Waste - Mixed	40	TN	\$	37	\$	1,462	T&D of trees, shrubs, miscellaneous wood, metal, and debris. Assume 0.5 ton per property.
	Survey#1 - Preconstruction Survey	85	EA	\$	407	\$	34,556	Establish a minimum 10 by-10 foot grid and then use a level and rod to measure pre-excavation elevations. Surveys will be conducted by an Illinois-licensed surveyor.
	Tree Removal (2"-4" dia)	7	EA	\$	813	\$	5,693	Based on actual costs incurred on a similar project (USS Lead).
	Stump Grinding	2	EA	\$	2,135	\$	4,269	Based on actual costs incurred on a similar project (USS Lead).
	Excavation	12,770	BCY	\$	63	\$	806,936	Excavation with a small excavator and some by hand. Signage and protective measures for pedestrian traffic on sidewalks or streets, as required. SESC measures as required.
	Demarcation Fabric	68,175	SF	\$	1	\$	83,174	High visibility fencing for excavations completed to maximum sample depth.
	Survey No. 2 - Post Excavation Survey	85	EA	\$	407	\$	34,556	Establish a minimum 10 by-10 foot grid and then use a level and rod to measure post-excavation elevations. Surveys will be conducted by an Illinois-licensed surveyor.
	Transport Material to Facility	17,878	TN	\$	5	\$	82,596	Transportation of soil to the Facility Area. Conversion from BCY to TN based on what is being seen on other similar projects in the region.
	Stockpile Management	1	LS	\$	120,869	\$	120,869	Includes shaping/compaction of stockpile; daily uncover/cover; purchase/deliver/place 4" of topsoil cover & hydroseed every 60 days.
	Stabilize Stockpile	1	LS	\$	139,684	\$	139,684	Allowance for seeding the stockpile every 60 days, maintenance period after each seeding, and a final seeding with straw matting.
	Backfill - General	5,707	BCY	\$	49	\$	279,358	Includes assistance with QA/QC sampling, purchase/delivery, installation, compaction, and density testing of general backfill (sand).
	Backfill - Topsoil	5,973	BCY	\$	61	\$	367,160	Includes assistance with QA/QC sampling, purchase/delivery, and installation of topsoil.
	Backfill - Select Topsoil	43	BCY	\$	72	\$	3,084	Includes assistance with QA/QC sampling, purchase/delivery, and installation of select topsoil (peat).
	Backfill - CA-6 Aggregate	1,890	TN	\$	47	\$	88,849	Includes assistance with QA/QC sampling, purchase/delivery, installation, compaction, and density testing of gravel (IDOT CA-6).
	Street Sweeping	7	MO	\$	5,551	\$	38,856	Performed from start of excavation through topsoil placement.
	Survey No. 3 - Post Backfill Survey	85	EA	\$	407	\$	34,556	Establish a minimum 10 by-10 foot grid and then use a level and rod to measure post-backfill elevations. Surveys will be conducted by an Illinois-licensed surveyor.
	Landscape - Supply/Plant Perenials	100	EA	\$	40	\$	4,000	HCSS Estimate
	Landscape - Supply/Plant Shrubs	82	EA	\$	135	\$	11,077	HCSS Estimate
	Landscape - Supply/Plant Trees	7	EA	\$	509	\$	3,560	Based on RSMeans
	Restoration - Sod Replacement and Maintenance	393	MSF	\$	938	\$	368,787	Includes 4-week maintenance/watering period for each property (for up to a total of 15 watering events per property).
	Landscape Warranty/Replacement	1	LS	\$	46,491	\$	46,491	Allowance for sod and trees for replacement. Assume 12% of total landscaping/sod placement costs.
	Restoration - Wood Mulch	1,200	SF	\$	1	\$	744	Placement in garden areas, 3-inches thick.
	Restoration - Rock Mulch	10	CY	\$	134	\$	1,340	Placement in garden areas with existing rock mulch, 3-inches thick.
	Restoration - Weed Block	2,200	SF	\$	0.29	\$	638	Place beneath wood mulch and rock mulch.
	Restoration - Drain Tile Repair	5	EA	\$	3,500	\$	17,500	Allowance
	Restoration - Concrete Repair	150	CY	\$	535	\$	80,267	Assume 10 feet of repair at each property where access will occur from/over sidewalk (assumed 30 properties). Assume 6-inches thick and 4.500 PSI
	Restoration - Asphalt	5,000	SF	\$	6	\$	28,950	Restoration for Alley 19 and any damaged asphalt during backfill and restoration activities. Assume 3-inches thick. IDOT A-3 surface material.
	Fence Replacement - Chain Link	200	LF	\$	34	\$	6,776	Assume 2 8-ft panels replaced at 15% of properties
	Post Construction Meeting	75	EA	\$	274	\$	20,570	Document issues identified during work, outstanding punch list items, and substantial completion at the property. Attendees include owner's representative, contractor, and landscaping subcontractor.
	Analytical Sampling	12	EA	\$	1,215	\$	14,582	Initial and QA/QC samples for general backfill, topsoil, etc.
	Demobilization	1	LS	\$	34,077	\$	34,077	
	Payment and Performance Bond	2.50%	of	\$	3,117,738	\$	77,943	
	Contingency	15%	of	\$	3,117,738	\$	467,661	

This construction cost estimate is not an offer for construction and/or project execution. The construction cost estimate for this Design is an Association for the Advancement of Cost Engineering (AACE) Class 2 estimate and is assumed to represent the actual total installed cost. The estimate above is considered control-level cost estimating, suitable for use in project budgeting and planning. This estimate has been prepared with partial design and engineering calculations. The level of accuracy for the class of estimate defines the upper and lower ranges of the cost estimate. It is based upon the level of design detail and uncertainty associate with that level of detail. For a Class 2 estimate, the accuracy range is +20% to -15%. It would appear prudent that internal budget allowances account for the highest cost indicated by this range as well as other site specific allowances. The cost estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Because of this, project feasibility and funding needs must be carefully reviewed prior to making specific financial decisions to help ensure proper project evaluation and adequate funding.

Appendix E

Agency Consultation Documentation



Map Layers Streetmap Aerial Hybrid World Topographic USATopographic

- ☒ Determined eligible for the NR
- ☒ Entered in the NR
- ☒ Part of a NR Historic District
- ☒ Part of a NR Historic District - contributing
- ☒ Part of a NR Historic District - non-contributing
- ☒ Undetermined
- ☐ NR Districts
- ☐ Survey Areas
- ☐ Senate Boundaries
- ☐ House Boundaries
- ☐ Floodplain
- ☐ Chicago Community Areas
- ☐ Cook County Government Districts

Illinois Threatened and Endangered Species by County

Illinois Natural Heritage Database

as of April 2, 2018

Important Note: The Illinois Natural Heritage Database is updated daily with data pertaining to threatened and endangered species occurrences in Illinois. Please check this website quarterly for updates to this list or contact Database staff directly at tara.kieninger@illinois.gov.

Note that because many birds observed in the state are merely migrants passing through, we typically only track those sightings which have evidence of breeding (nest with young, breeding and/or nesting behavior in adults, juveniles observed, etc.). We normally do not track birds observed perched on a tree branch, flying in the air, or feeding unless other evidence of breeding is witnessed or there is an existing breeding record for the species in the area.

State Status:

LE - listed as endangered

LT - listed as threatened

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
Adams				
<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	1	1966-09-28
<i>Anguilla rostrata</i>	American Eel	LT	4	2016-09-14
<i>Carex prasina</i>	Drooping Sedge	LT	1	1989-06-15
<i>Cumberlandia monodonta</i>	Spectaclecase	LE	1	1987-07-19
<i>Delphinium carolinianum</i>	Wild Blue Larkspur	LT	2	1971-05-20
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	2	2007-06-30
<i>Ellipsaria lineolata</i>	Butterfly	LT	4	2016-07-21
<i>Elliptio crassidens</i>	Elephant-ear	LE	1	1987-06-18
<i>Fusconaia ebena</i>	Ebonysnail	LE	3	2016-07-21
<i>Hybognathus hayi</i>	Cypress Minnow	LE	1	2004-09-16
<i>Ictinia mississippiensis</i>	Mississippi Kite	LT	1	1990-07-13
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	1989
<i>Ligumia recta</i>	Black Sandshell	LT	3	2015-07-21
<i>Melanthium virginicum</i>	Bunchflower	LT	1	1944-06-29
<i>Mentzelia oligosperma</i>	Stickleaf	LE	1	2009
<i>Myotis grisescens</i>	Gray Bat	LE	1	2000-02-08
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	10	2016-06-27
<i>Myotis sodalis</i>	Indiana Bat	LE	16	2017-05-28
<i>Pandion haliaetus</i>	Osprey	LE	1	1986-SU
<i>Plethobasus cyphus</i>	Sheepnose	LE	1	1987-07-19
<i>Poa wolfii</i>	Wolf's Bluegrass	LE	1	2010
<i>Scirpus polyphyllus</i>	Bulrush	LT	1	1989-06-15
<i>Thryomanes bewickii</i>	Bewick's Wren	LE	1	2013-05-18
<i>Trifolium reflexum</i>	Buffalo Clover	LT	1	2015-05-20
<i>Trillium viride</i>	Green Trillium	LE	1	2002-05-10
<i>Ulmus thomasii</i>	Rock Elm	LE	1	1943-06-20
<i>Viburnum molle</i>	Arrowwood	LT	3	2011-06-20

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
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Total # of Species 27

Alexander

<i>Amorpha nitens</i>	Smooth False Indigo	LE	1	2015-10-04
<i>Anguilla rostrata</i>	American Eel	LT	2	2013-09-06
<i>Botrychium biternatum</i>	Southern Grape Fern	LE	2	2015
<i>Carex intumescens</i>	Swollen Sedge	LE	1	1996-06-03
<i>Carex nigromarginata</i>	Black-edged Sedge	LE	1	1994-07-21
<i>Carex oxylepis</i>	Sharp-scaled Sedge	LT	5	2015
<i>Carex willdenowii</i>	Willdenow's Sedge	LT	1	1994-05-05
<i>Carya aquatica</i>	Water Hickory	LT	1	1993-07-03
<i>Carya pallida</i>	Pale Hickory	LE	2	2013
<i>Cladrastis lutea</i>	Yellowwood	LE	1	2007-11-10
<i>Clematis crispa</i>	Blue Jasmine	LE	2	2000-05-17
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	LE	2	2010-06
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	6	2013-08-22
<i>Crystallaria asprella</i>	Crystal Darter	LT	2	2010
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	1	1992-04-30
<i>Egretta caerulea</i>	Little Blue Heron	LE	2	2006-07-30
<i>Eryngium prostratum</i>	Eryngo	LE	2	1997-08-06
<i>Glyceria arkansana</i>	Arkansas Mannagrass	LE	2	2007-05-24
<i>Heteranthera reniformis</i>	Mud Plantain	LE	2	2004-10-29
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	1	1963-07-15
<i>Hybognathus hayi</i>	Cypress Minnow	LE	2	2014-09-24
<i>Hyla avivoca</i>	Bird-voiced Treefrog	LT	1	2003-05-08
<i>Ictinia mississippiensis</i>	Mississippi Kite	LT	1	2013-07-06
<i>Justicia ovata</i>	Water Willow	LE	1	1991-08-20
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	1988
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	3	2015-10-14
<i>Lepomis symmetricus</i>	Bantam Sunfish	LT	4	1996-05-15
<i>Limnothlypis swainsonii</i>	Swainson's Warbler	LE	2	1993-06-24
<i>Melothria pendula</i>	Squirting Cucumber	LT	3	2017-08-15
<i>Moxostoma carinatum</i>	River Redhorse	LT	2	2006
<i>Myotis austroriparius</i>	Southeastern Myotis	LE	5	2015-04-08
<i>Myotis grisescens</i>	Gray Bat	LE	1	1991-07-01
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	4	2016-02-14
<i>Myotis sodalis</i>	Indiana Bat	LE	7	2016-02-14
<i>Notropis boops</i>	Bigeye Shiner	LE	8	2014-06-03
<i>Orconectes lancifer</i>	Shrimp Crayfish	LE	2	1999-10-01
<i>Pandion haliaetus</i>	Osprey	LE	1	2017-04-22
<i>Penstemon tubaeiflorus</i>	Tube Beard Tongue	LE	2	2004-05-21
<i>Planera aquatica</i>	Water Elm	LT	2	1999-08-13

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Alexander</u>				
<i>Pseudacris illinoensis</i>	Illinois Chorus Frog	LT	1	2017
<i>Pseudemys concinna</i>	River Cooter	LE	1	2013-06-14
<i>Quercus montana</i>	Rock Chestnut Oak	LT	1	2007-05-23
<i>Quercus phellos</i>	Willow Oak	LT	1	2006-07-01
<i>Quercus texana</i>	Nuttall's Oak	LE	2	2006-07-01
<i>Schoenoplectus hallii</i>	Hall's Bulrush	LT	1	1993
<i>Sternula antillarum</i>	Least Tern	LE	3	2012-07-11
<i>Styrax americana</i>	Storax	LT	2	2010-09-15
<i>Styrax grandifolius</i>	Bigleaf Snowbell Bush	LE	1	2007-11-10
<i>Urtica chamaedryoides</i>	Nettle	LT	3	2017-10-18

Total # of Species **49**

Bond

<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1998-07-15
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	1986-07-21
<i>Myotis sodalis</i>	Indiana Bat	LE	1	1987-07-08
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	1	1990
<i>Sabatia campestris</i>	Prairie Rose Gentian	LE	2	2002-07-24
<i>Sistrurus catenatus</i>	Massasauga	LE	1	2017-09-01
<i>Spiranthes vernalis</i>	Spring Ladies' Tresses	LE	1	2014-07-09
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	2	2012-10-17
<i>Tyto alba</i>	Barn Owl	LT	1	2014

Total # of Species **9**

Boone

<i>Alasmodonta viridis</i>	Slippershell	LT	2	2015-09-15
<i>Alnus incana ssp. rugosa</i>	Speckled Alder	LE	1	2011-10-01
<i>Aster furcatus</i>	Forked Aster	LT	1	1977-08-19
<i>Besseyia bullii</i>	Kittentails	LT	1	2009-SU
<i>Elliptio dilatata</i>	Spike	LT	1	2007-06-26
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	3	2015
<i>Etheostoma exile</i>	Iowa Darter	LT	4	2017-06-14
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	1	1968-04-06
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	2003
<i>Lethenteron appendix</i>	American Brook Lamprey	LT	5	2016-08-10
<i>Ligumia recta</i>	Black Sandshell	LT	4	2017-09-06
<i>Minuartia patula</i>	Slender Sandwort	LT	1	2009-05-19
<i>Notropis heterolepis</i>	Blacknose Shiner	LE	1	1965-07-13
<i>Sambucus racemosa ssp. pubens</i>	Red-berried Elder	LE	1	1986
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	1	2003

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Total # of Species</u>		<u>15</u>		
<u>Brown</u>				
<i>Agalinis skinneriana</i>	Pale False Foxglove	LT	1	2009-08-13
<i>Anguilla rostrata</i>	American Eel	LT	1	1988-07-07
<i>Asio flammeus</i>	Short-eared Owl	LE	1	2013-02-19
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	1	2016-09-21
<i>Botaurus lentiginosus</i>	American Bittern	LE	1	2011-06-07
<i>Caprimulgus carolinensis</i>	Chuck-will's-widow	LT	1	2013-06
<i>Carex prasina</i>	Drooping Sedge	LT	1	1997-06-04
<i>Circus cyaneus</i>	Northern Harrier	LE	1	2013-02-19
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	1	2005-06-23
<i>Fundulus dispar</i>	Starhead Topminnow	LT	1	1927-06-20
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	2010-05-30
<i>Lycopodium dendroideum</i>	Ground Pine	LE	1	1996-06
<i>Melanthium virginicum</i>	Bunchflower	LT	1	1983-07-01
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	3	2016-06-27
<i>Myotis sodalis</i>	Indiana Bat	LE	2	2015-06-11
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	1	2011-06-07
<i>Poa wolfii</i>	Wolf's Bluegrass	LE	4	2010
<i>Rallus elegans</i>	King Rail	LE	1	2011-06-07
<i>Scirpus polyphyllus</i>	Bulrush	LT	1	1996-06
<i>Trifolium reflexum</i>	Buffalo Clover	LT	3	1996-06

Total # of Species 20

Bureau

<i>Anguilla rostrata</i>	American Eel	LT	1	2010-07-15
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	2	2016-08-11
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	1	2008-05-05
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	2	2003-05-16
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	1	2014-07-17
<i>Fundulus diaphanus</i>	Banded Killifish	LT	1	2015-06-09
<i>Fundulus dispar</i>	Starhead Topminnow	LT	2	2007-06-27
<i>Helianthus giganteus</i>	Tall Sunflower	LE	1	2010-07-05
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	LT	1	2006-06-23
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	2009-05
<i>Lethenteron appendix</i>	American Brook Lamprey	LT	2	2014-07-30
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	6	2016-07-23
<i>Myotis sodalis</i>	Indiana Bat	LE	6	2011-05-02
<i>Notropis heterolepis</i>	Blacknose Shiner	LE	3	2007-06-05
<i>Notropis texanus</i>	Weed Shiner	LE	3	2014-07-25
<i>Orobanche ludoviciana</i>	Broomrape	LT	2	2012-11-28

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Bureau</u>				
<i>Pinus banksiana</i>	Jack Pine	LE	1	2011-10-13
<i>Speyeria idalia</i>	Regal Fritillary	LT	1	2009-07-02
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	1	2002-06-23
<u>Total # of Species</u>		<u>19</u>		

Calhoun

<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	2	2006-11
<i>Agalinis skinneriana</i>	Pale False Foxglove	LT	2	2006-FA
<i>Ammocrypta clarum</i>	Western Sand Darter	LE	5	2014-07-25
<i>Anguilla rostrata</i>	American Eel	LT	9	2015-09-10
<i>Apalone mutica</i>	Smooth Softshell	LE	2	2004-04-17
<i>Asclepias stenophylla</i>	Narrow-leaved Green Milkweed	LE	2	2011-06-30
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	1	1980-10-01
<i>Buchnera americana</i>	Blue Hearts	LT	2	2011-08-02
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	3	1994-07
<i>Cumberlandia monodonta</i>	Spectaclecase	LE	1	1988
<i>Delphinium carolinianum</i>	Wild Blue Larkspur	LT	1	2010
<i>Ellipsaria lineolata</i>	Butterfly	LT	4	2015-10-09
<i>Fundulus dispar</i>	Starhead Topminnow	LT	3	1972-09-30
<i>Ictinia mississippiensis</i>	Mississippi Kite	LT	1	1999-06
<i>Ligumia recta</i>	Black Sandshell	LT	3	2015-10-27
<i>Mentzelia oligosperma</i>	Stickleaf	LE	1	2013
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	2014-06-17
<i>Myotis sodalis</i>	Indiana Bat	LE	5	2016-06-12
<i>Notropis boops</i>	Bigeye Shiner	LE	3	2011-06-07
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	1	1992-07-23
<i>Phacelia giliioides</i>	Ozark Phacelia	LE	1	1997
<i>Poa alsodes</i>	Grove Bluegrass	LE	1	1990-07
<i>Salvia azurea</i>	Blue Sage	LT	1	1981
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	1994-05-24
<u>Total # of Species</u>		<u>24</u>		

Carroll

<i>Ammocrypta clarum</i>	Western Sand Darter	LE	3	2017-07-13
<i>Anguilla rostrata</i>	American Eel	LT	2	2016-07-06
<i>Aster furcatus</i>	Forked Aster	LT	1	1995-09-02
<i>Besseyia bullii</i>	Kittentails	LT	4	2017
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	LE	2	2017-08-10
<i>Canis lupus</i>	Gray/timber Wolf	LT	1	2011-11-19
<i>Ceanothus herbaceus</i>	Redroot	LE	1	2004-10-22

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Carroll</u>				
<i>Cimicifuga americana</i>	American Bugbane	LE	1	2017-06-03
<i>Cimicifuga racemosa</i>	False Bugbane	LE	1	2016-06-30
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	1	2000-08-14
<i>Cyperus grayoides</i>	Umbrella Sedge	LT	2	2017
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	1	1964-05
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	1	2017
<i>Ellipsaria lineolata</i>	Butterfly	LT	1	2009-09-01
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	4	2014
<i>Equisetum pratense</i>	Meadow Horsetail	LT	2	2014-09-17
<i>Equisetum scirpoides</i>	Dwarf Scouring Rush	LE	1	1978
<i>Gallinula galeata</i>	Common Gallinule	LE	1	2004-07-07
<i>Gymnocarpium robertianum</i>	Scented Oak Fern	LE	1	1986
<i>Hackelia deflexa</i> var. <i>americana</i>	Stickseed	LE	1	2016-06-07
<i>Hemidactylium scutatum</i>	Four-toed Salamander	LT	1	2002
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	LT	3	2016-08-22
<i>Hudsonia tomentosa</i>	False Heather	LE	2	2017-06-03
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	1	1963-07-23
<i>Hybopsis amnis</i>	Pallid Shiner	LE	3	2017-09-27
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	2004-07-07
<i>Lampsilis higginsii</i>	Higgins Eye	LE	1	2016-05-19
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	2016-05-20
<i>Lechea intermedia</i>	Pinweed	LE	1	1998-03-16
<i>Ligumia recta</i>	Black Sandshell	LT	2	2009-09-01
<i>Lycopodium dendroideum</i>	Ground Pine	LE	1	1990-05
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	2016-02-17
<i>Notropis texanus</i>	Weed Shiner	LE	2	2017-10-19
<i>Orobanche ludoviciana</i>	Broomrape	LT	2	2017-06-03
<i>Penstemon grandiflorus</i>	Large-flowered Beard Tongue	LE	1	2017
<i>Pinus banksiana</i>	Jack Pine	LE	2	2005
<i>Platanthera flava</i>	Tubercled Orchid	LT	1	2007-06-13
<i>Polanisia jamesii</i>	James' Clammyweed	LE	1	2015-08
<i>Sambucus racemosa</i> ssp. <i>pubens</i>	Red-berried Elder	LE	1	2017
<i>Solidago sciaphila</i>	Cliff Goldenrod	LT	2	2017
<i>Speyeria idalia</i>	Regal Fritillary	LT	2	2017-07-06
<i>Stygobromus iowae</i>	Iowa Amphipod	LE	2	1997-04-05
<i>Sullivantia sullivantii</i>	Sullivantia	LT	1	2011-10-13
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	2	2017-08-07
<i>Trillium erectum</i>	Ill-scented Trillium	LE	1	2017-06-03
<i>Tropidoclonion lineatum</i>	Lined Snake	LT	1	2015-08-10
<i>Tyto alba</i>	Barn Owl	LT	1	1990
<i>Viola canadensis</i>	Canada Violet	LE	2	2017

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Carroll</u>				
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	1	2006-06-07
<u>Total # of Species</u> <u>49</u>				
<u>Cass</u>				
<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	1	2015-08-17
<i>Agalinis skinneriana</i>	Pale False Foxglove	LT	1	2015-09-11
<i>Anguilla rostrata</i>	American Eel	LT	2	2009-06-24
<i>Apalone mutica</i>	Smooth Softshell	LE	1	2016-05-11
<i>Astragalus distortus</i>	Bent Milk Vetch	LE	1	2003
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	4	2017-09-22
<i>Botaurus lentiginosus</i>	American Bittern	LE	1	1979-05-31
<i>Buchnera americana</i>	Blue Hearts	LT	1	1980-PRE
<i>Caprimulgus carolinensis</i>	Chuck-will's-widow	LT	1	2016-06-18
<i>Circus cyaneus</i>	Northern Harrier	LE	1	2004-06-29
<i>Cyperus grayoides</i>	Umbrella Sedge	LT	1	2017-06-28
<i>Echinodorus tenellus</i>	Small Burhead	LE	3	1998-10-24
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	3	1987-04-18
<i>Fimbristylis vahlii</i>	Vahl's Fimbry	LE	3	2006-08-23
<i>Gallinula galeata</i>	Common Gallinule	LE	1	1991-07-08
<i>Hesperia ottoe</i>	Ottoe Skipper	LE	1	1998
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	LT	5	2017-06-14
<i>Hypericum adpressum</i>	Shore St. John's Wort	LE	1	1992-07-17
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	1991-07-08
<i>Kinosternon flavescens</i>	Yellow Mud Turtle	LE	1	2002-04-25
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	1992-08-01
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	1	1965-11-16
<i>Moxostoma carinatum</i>	River Redhorse	LT	1	2000
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	1998-09-02
<i>Myotis sodalis</i>	Indiana Bat	LE	2	2017-06-14
<i>Necturus maculosus</i>	Mudpuppy	LT	1	1984
<i>Polygala incarnata</i>	Pink Milkwort	LE	1	1988
<i>Pseudacris illinoensis</i>	Illinois Chorus Frog	LT	4	2017-04-03
<i>Sanguisorba canadensis</i>	American Burnet	LE	1	1996-09-04
<i>Schoenoplectus hallii</i>	Hall's Bulrush	LT	7	2008-07-23
<i>Speyeria idalia</i>	Regal Fritillary	LT	3	2017-06-13
<i>Stylisma pickeringii</i>	Patterson's Bindweed	LE	2	2006-08-24
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	2	2016-09-12
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	1	1978-06-21
<u>Total # of Species</u> <u>34</u>				

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Champaign</u>				
<i>Alasmidonta viridis</i>	Slippershell	LT	2	2015-08-28
<i>Ammocrypta pellucidum</i>	Eastern Sand Darter	LT	2	2012-08-27
<i>Amorpha nitens</i>	Smooth False Indigo	LE	1	2008-06-15
<i>Anguilla rostrata</i>	American Eel	LT	1	1961-03-05
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	2	2013
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	LE	2	2007
<i>Carex communis</i>	Fibrous-rooted Sedge	LT	1	1998-05-02
<i>Circus cyaneus</i>	Northern Harrier	LE	1	1994-SUM
<i>Clematis crispa</i>	Blue Jasmine	LE	1	2003-07-27
<i>Cyclonaias tuberculata</i>	Purple Wartyback	LT	3	2012-08-08
<i>Dalea foliosa</i>	Leafy Prairie Clover	LE	1	2008-07-27
<i>Elliptio dilatata</i>	Spike	LT	2	1988-08-20
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	1	1953-05-01
<i>Epiplatys torulosa rangiana</i>	Northern Riffleshell	LE	1	2013-SU
<i>Etheostoma camurum</i>	Bluebreast Darter	LE	1	2014
<i>Glyceria arkansana</i>	Arkansas Mannagrass	LE	1	2004-06-04
<i>Gratiola quartermantiae</i>	Hedge Hyssop	LE	1	2005-06-26
<i>Hybopsis amblops</i>	Bigeye Chub	LE	6	2014-08-25
<i>Hybopsis amnis</i>	Pallid Shiner	LE	3	2012-07-10
<i>Iresine rhizomatosa</i>	Bloodleaf	LE	1	2004-09-11
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	1993-08-01
<i>Lampsilis fasciola</i>	Wavy-rayed Lampmussel	LE	4	2014-08-20
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1990-05-23
<i>Lonicera flava</i>	Yellow Honeysuckle	LE	1	2005-07-09
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	2014-08-29
<i>Myotis sodalis</i>	Indiana Bat	LE	1	2015-07-24
<i>Necturus maculosus</i>	Mudpuppy	LT	3	2012-06-04
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	1	2014-08-11
<i>Phlox pilosa ssp. sangamonensis</i>	Sangamon Phlox	LE	5	2017-05-26
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	4	2010-10
<i>Simpsonaias ambigua</i>	Salamander Mussel	LE	1	2000-08-16
<i>Tyto alba</i>	Barn Owl	LT	1	2005-08-02
<i>Villosa lienosa</i>	Little Spectaclecase	LT	5	2015-09

Total # of Species 33

Christian

<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	1979-07-28
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	1	2016-04-24
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	2000-06-12
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	1	2009-06-18
<i>Sedum telephoides</i>	American Orpine	LT	1	1948-06-02

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Christian</u>				
<i>Tyto alba</i>	Barn Owl	LT	2	2015-07-17
<u>Total # of Species</u> <u>6</u>				

Clark

<i>Ambystoma jeffersonianum</i>	Jefferson Salamander	LT	10	2017-03-01
<i>Anguilla rostrata</i>	American Eel	LT	1	2013
<i>Carex communis</i>	Fibrous-rooted Sedge	LT	2	2015-05-19
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	1	2000-08-03
<i>Elliptio crassidens</i>	Elephant-ear	LE	1	1988-09-02
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	1	1960-11-06
<i>Hybopsis amblops</i>	Bigeye Chub	LE	2	2011-07-29
<i>Moxostoma valenciennesi</i>	Greater Redhorse	LE	1	1998-09-04
<i>Myotis sodalis</i>	Indiana Bat	LE	1	2015-06-11
<i>Nocomis micropogon</i>	River Chub	LE	1	1964-10-04
<i>Silene regia</i>	Royal Catchfly	LE	1	1998-07-22
<i>Tyto alba</i>	Barn Owl	LT	1	2011-06-15
<u>Total # of Species</u> <u>12</u>				

Clay

<i>Ammocrypta pellucidum</i>	Eastern Sand Darter	LT	1	1940
<i>Elliptio dilatata</i>	Spike	LT	4	2012-08-14
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	6	2015-07
<i>Ligumia recta</i>	Black Sandshell	LT	1	2012-08-14
<i>Lithasia obovata</i>	Shawnee Rocksnail	LE	1	1937-08-15
<i>Melica mutica</i>	Two-flowered Melic Grass	LE	1	1990-05-15
<i>Notropis anogenus</i>	Pugnose Shiner	LE	2	1940
<i>Ptychobranchus fasciolaris</i>	Kidneyshell	LE	1	2012-08-14
<i>Silene regia</i>	Royal Catchfly	LE	1	2015-05-14
<i>Stenanthium gramineum</i>	Grass-leaved Lily	LT	1	2012-07-16
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	2010-09-27
<i>Tympanuchus cupido</i>	Greater Prairie-Chicken	LE	2	1993-03-27
<i>Tyto alba</i>	Barn Owl	LT	3	2016-06-07
<i>Villosa lienosa</i>	Little Spectaclecase	LT	1	1956
<u>Total # of Species</u> <u>14</u>				

Clinton

<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	1	1971-06-02
<i>Elliptio dilatata</i>	Spike	LT	2	2002-09-12
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1998-07-15
<i>Myotis sodalis</i>	Indiana Bat	LE	2	2003-09-25

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Clinton</u>				
<i>Pandion haliaetus</i>	Osprey	LE	4	2017
<i>Sistrurus catenatus</i>	Massasauga	LE	1	2017-09-01
<i>Spiranthes vernalis</i>	Spring Ladies' Tresses	LE	1	2014-07-09
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	2	2012-03-30
<i>Tyto alba</i>	Barn Owl	LT	3	2015-06-30
<u>Total # of Species</u> <u>9</u>				

<u>Coles</u>				
<i>Alasmidonta viridis</i>	Slippershell	LT	1	2012-08-06
<i>Ammocrypta pellucidum</i>	Eastern Sand Darter	LT	4	2011-07-27
<i>Anguilla rostrata</i>	American Eel	LT	1	2011-08-01
<i>Apalone mutica</i>	Smooth Softshell	LE	1	2012-07-20
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	1994-08-05
<i>Botrychium multifidum</i>	Northern Grape Fern	LE	1	1998-04-29
<i>Calephelis muticum</i>	Swamp Metalmark	LE	1	1981-06-07
<i>Carex communis</i>	Fibrous-rooted Sedge	LT	3	2016-05-18
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	3	2001-04-12
<i>Elliptio dilatata</i>	Spike	LT	3	2013-08-26
<i>Epioblasma triquetra</i>	Snuffbox	LE	3	2012-09-06
<i>Etheostoma histrio</i>	Harlequin Darter	LE	1	1984-06-15
<i>Gallinula galeata</i>	Common Gallinule	LE	1	2004-06-02
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	1981-06-26
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1991-06-29
<i>Lethenteron appendix</i>	American Brook Lamprey	LT	1	1979-09-11
<i>Myotis sodalis</i>	Indiana Bat	LE	1	2017-08-19
<i>Notropis boops</i>	Bigeye Shiner	LE	1	1962-07-10
<i>Orobanche ludoviciana</i>	Broomrape	LT	1	1994-02-17
<i>Ptychobranhus fasciolaris</i>	Kidneyshell	LE	5	2012-09-06
<i>Tyto alba</i>	Barn Owl	LT	3	2015-05-29
<i>Villosa lienosa</i>	Little Spectaclecase	LT	3	2012-08-06
<u>Total # of Species</u> <u>22</u>				

<u>Cook</u>				
<i>Agalinis skinneriana</i>	Pale False Foxglove	LT	2	2017-08-11
<i>Alasmidonta viridis</i>	Slippershell	LT	1	2012-08-28
<i>Amelanchier interior</i>	Shadbush	LT	3	2017-05-17
<i>Amelanchier sanguinea</i>	Shadbush	LE	2	2016-05-12
<i>Ammophila breviligulata</i>	Marram Grass	LT	6	2016-10-30
<i>Anguilla rostrata</i>	American Eel	LT	2	2015-05-24
<i>Arctostaphylos uva-ursi</i>	Bearberry	LE	2	2016-08-20

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Cook</u>				
<i>Asclepias lanuginosa</i>	Wooly Milkweed	LE	2	2017-06-08
<i>Asclepias ovalifolia</i>	Oval Milkweed	LE	1	2017-06-05
<i>Aster furcatus</i>	Forked Aster	LT	4	2017-08-31
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	3	1995-06-14
<i>Beckmannia syzigachne</i>	American Slough Grass	LE	4	2017-07-13
<i>Besseyia bullii</i>	Kittentails	LT	1	2017-05-05
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	LE	12	2017-08-21
<i>Botaurus lentiginosus</i>	American Bittern	LE	1	2014-05-14
<i>Botrychium multifidum</i>	Northern Grape Fern	LE	1	1992-05-06
<i>Botrychium simplex</i>	Dwarf Grape Fern	LE	1	1976-07-09
<i>Buchnera americana</i>	Blue Hearts	LT	1	2015-09-15
<i>Cakile edentula</i>	Sea Rocket	LT	9	2016-09-02
<i>Calephelis muticum</i>	Swamp Metalmark	LE	1	2013-SU
<i>Calopogon tuberosus</i>	Grass Pink Orchid	LE	5	2017-06-27
<i>Caprimulgus carolinensis</i>	Chuck-will's-widow	LT	1	1988-06-06
<i>Carex aurea</i>	Golden Sedge	LT	7	2017-06-16
<i>Carex bromoides</i>	Sedge	LT	5	2016-08-29
<i>Carex echinata</i>	Sedge	LE	1	2002-06-17
<i>Carex formosa</i>	Sedge	LE	4	2016-06-27
<i>Carex garberi</i>	Sedge	LE	1	2000-05-24
<i>Carex intumescens</i>	Swollen Sedge	LE	3	2015-06-19
<i>Carex tuckermanii</i>	Tuckerman's Sedge	LE	3	2017-06-14
<i>Carex viridula</i>	Little Green Sedge	LT	2	2017-07-23
<i>Catostomus catostomus</i>	Longnose Sucker	LT	4	2016-11-14
<i>Chamaedaphne calyculata</i>	Leatherleaf	LT	1	1987-03-28
<i>Chamaesyce polygonifolia</i>	Seaside Spurge	LE	4	2016-09-02
<i>Chimaphila maculata</i>	Spotted Wintergreen	LE	1	1981-11-13
<i>Chlidonias niger</i>	Black Tern	LE	5	1996-07-22
<i>Cimicifuga racemosa</i>	False Bugbane	LE	1	2016-08-16
<i>Cirsium pitcheri</i>	Pitcher's (Dune) Thistle	LT	2	2017-10-18
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	7	2011-05-20
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	LT	1	2011-06-23
<i>Comptonia peregrina</i>	Sweetfern	LE	1	2017-07-26
<i>Corallorhiza maculata</i>	Spotted Coral-root Orchid	LE	1	1999-07-03
<i>Coregonus artedii</i>	Cisco	LT	3	1959
<i>Dalea foliosa</i>	Leafy Prairie Clover	LE	2	2017-07-29
<i>Deschampsia flexuosa</i>	Hairgrass	LE	1	2003
<i>Dichanthelium boreale</i>	Northern Panic Grass	LE	2	2008-06-14
<i>Drosera intermedia</i>	Narrow-leaved Sundew	LT	4	2016-08-21
<i>Drosera rotundifolia</i>	Round-leaved Sundew	LE	2	1993
<i>Egretta caerulea</i>	Little Blue Heron	LE	3	2002

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Cook</u>				
<i>Egretta thula</i>	Snowy Egret	LE	1	1987
<i>Eleocharis olivacea</i>	Capitate Spikerush	LE	2	2002-09-09
<i>Eleocharis pauciflora</i>	Few-flowered Spikerush	LE	1	2002-06
<i>Eleocharis rostellata</i>	Beaked Spike Rush	LT	1	2015-09-03
<i>Elliptio dilatata</i>	Spike	LT	1	1999-08-05
<i>Elymus trachycaulus</i>	Bearded Wheat Grass	LE	4	2017-07-11
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	19	2016-12-12
<i>Epilobium strictum</i>	Downy Willow Herb	LT	1	1978-08-05
<i>Etheostoma exile</i>	Iowa Darter	LT	6	2015-08-12
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	4	2016-06-28
<i>Fundulus diaphanus</i>	Banded Killifish	LT	15	2017-10-20
<i>Fundulus dispar</i>	Starhead Topminnow	LT	2	1980
<i>Gallinula galeata</i>	Common Gallinule	LE	7	2010
<i>Geranium bicknellii</i>	Northern Cranesbill	LE	3	2013-05-29
<i>Helianthus giganteus</i>	Tall Sunflower	LE	1	1999-09-12
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	2	1987-10-05
<i>Hypericum kalmianum</i>	Kalm's St. John's Wort	LE	3	2017-10-08
<i>Ixobrychus exilis</i>	Least Bittern	LT	5	2014-05-14
<i>Juncus alpinoarticulatus</i>	Richardson's Rush	LT	4	2017-07-19
<i>Juniperus communis</i>	Ground Juniper	LT	3	2017-07-08
<i>Lathyrus ochroleucus</i>	Pale Vetchling	LT	2	2017-06-05
<i>Lespedeza leptostachya</i>	Prairie Bush Clover	LE	1	1995-08-30
<i>Ligumia recta</i>	Black Sandshell	LT	1	1999-08-05
<i>Lonicera dioica</i> var. <i>glaucescens</i>	Red Honeysuckle	LE	1	2017-07-08
<i>Medeola virginiana</i>	Indian Cucumber Root	LE	1	2009-05-31
<i>Minuartia patula</i>	Slender Sandwort	LT	2	2017-10-20
<i>Moxostoma carinatum</i>	River Redhorse	LT	1	2013-07-19
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	5	2012-08-01
<i>Nannothemis bella</i>	Elfin Skimmer	LT	1	2007-06-10
<i>Necturus maculosus</i>	Mudpuppy	LT	6	2016-06-17
<i>Notropis heterodon</i>	Blackchin Shiner	LT	1	1967-07-10
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	3	2013-07-31
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	12	2017-06-13
<i>Pandion haliaetus</i>	Osprey	LE	23	2017-07-25
<i>Papaipema eryngii</i>	Eryngium Stem Borer	LT	1	2003
<i>Phalaropus tricolor</i>	Wilson's Phalarope	LE	1	1981
<i>Pinus banksiana</i>	Jack Pine	LE	3	2017-10-08
<i>Plantago cordata</i>	Heart-leaved Plantain	LE	1	2008-06-21
<i>Platanthera ciliaris</i>	Orange Fringed Orchid	LE	1	2016-07-21
<i>Platanthera clavellata</i>	Wood Orchid	LE	2	2000-07-20
<i>Platanthera flava</i>	Tuberclad Orchid	LT	2	1999-06

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Cook</u>				
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid	LE	12	2017-06-28
<i>Platanthera psycodes</i>	Purple Fringed Orchid	LE	1	2016-07-20
<i>Poa languida</i>	Weak Bluegrass	LE	1	2013-06-19
<i>Pogonia ophioglossoides</i>	Snake-mouth	LE	2	2000-06-20
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	3	2012-07-19
<i>Polygonatum pubescens</i>	Downy Solomon's Seal	LT	7	2017-05-16
<i>Polygonum careyi</i>	Carey's Heartsease	LE	1	1986
<i>Populus balsamifera</i>	Balsam Poplar	LE	1	2004-04-28
<i>Potamogeton gramineus</i>	Grass-leaved Pondweed	LT	1	2002-06-01
<i>Potamogeton robbinsii</i>	Fern Pondweed	LE	1	1987-08-27
<i>Potamogeton strictifolius</i>	Stiff Pondweed	LE	1	1998-06-05
<i>Rallus elegans</i>	King Rail	LE	3	2013
<i>Rhynchospora alba</i>	Beaked Rush	LE	1	1976
<i>Rubus odoratus</i>	Purple-flowering Raspberry	LT	1	2016-08-11
<i>Rubus pubescens</i>	Dwarf Raspberry	LT	5	2017-05-26
<i>Rubus schneideri</i>	Bristly Blackberry	LT	1	1996
<i>Sanguisorba canadensis</i>	American Burnet	LE	1	2014
<i>Scirpus hattorianus</i>	Bulrush	LE	2	2012-07-03
<i>Silene regia</i>	Royal Catchfly	LE	1	2017-07-31
<i>Sistrurus catenatus</i>	Massasauga	LE	4	2009
<i>Sisyrinchium montanum</i>	Mountain Blue-eyed Grass	LE	11	2017-06-17
<i>Somatochlora hineana</i>	Hine's Emerald Dragonfly	LE	4	2017-06
<i>Sparganium emersum</i>	Green-fruited Bur-reed	LE	1	2017-08-28
<i>Spiranthes lucida</i>	Yellow-lipped Ladies' Tresses	LE	2	2017-06-03
<i>Stellaria pubera</i>	Great Chickweed	LE	1	2016-05-04
<i>Tetraneuris herbacea</i>	Lakeside Daisy	LE	2	2017-05-07
<i>Tofieldia glutinosa</i>	False Asphodel	LT	3	2017-06-26
<i>Trientalis borealis</i>	Star-flower	LE	3	2016-05-15
<i>Triglochin maritima</i>	Common Bog Arrow Grass	LT	2	2016-08-28
<i>Triglochin palustris</i>	Slender Bog Arrow Grass	LT	1	2017-08-11
<i>Trillium cernuum</i>	Nodding Trillium	LE	2	2014-05-22
<i>Utricularia intermedia</i>	Flat-leaved Bladderwort	LT	2	2017-06-21
<i>Utricularia minor</i>	Small Bladderwort	LE	1	1990
<i>Vaccinium corymbosum</i>	Highbush Blueberry	LE	2	2014-07-17
<i>Vaccinium macrocarpon</i>	Large Cranberry	LE	1	1987-03-28
<i>Vaccinium oxycoccos</i>	Small Cranberry	LE	1	1999-11-02
<i>Veronica scutellata</i>	Marsh Speedwell	LT	9	2017-09-27
<i>Viola blanda</i>	Hairy White Violet	LE	2	1999-04
<i>Viola canadensis</i>	Canada Violet	LE	1	2017-04-23
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	7	2017-06-01

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
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Total # of Species 129

Crawford

<i>Ambystoma platineum</i>	Silvery Salamander	LE	1	2017-07-20
<i>Ammocrypta pellucidum</i>	Eastern Sand Darter	LT	3	2007-09-25
<i>Anguilla rostrata</i>	American Eel	LT	2	1988-08-04
<i>Apalone mutica</i>	Smooth Softshell	LE	1	2017-06-28
<i>Clematis viorna</i>	Leatherflower	LE	1	2011-05-25
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	LT	1	1999-06
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	1	2011-05-25
<i>Etheostoma exile</i>	Iowa Darter	LT	1	1962-06-26
<i>Fusconaia ebena</i>	Ebonysnail	LE	1	1999-06
<i>Hybopsis amblops</i>	Bigeye Chub	LE	4	2016-09-29
<i>Ichthyomyzon fossor</i>	Northern Brook Lamprey	LE	1	1983-07-20
<i>Iresine rhizomatosa</i>	Bloodleaf	LE	1	2016-09-01
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	1998-06-15
<i>Necturus maculosus</i>	Mudpuppy	LT	1	2014-04-10
<i>Syrax americana</i>	Storax	LT	1	2010-10-05
<i>Thamnophis sauritus</i>	Eastern Ribbon Snake	LT	2	2011-05-25

Total # of Species 16

Cumberland

<i>Ammocrypta pellucidum</i>	Eastern Sand Darter	LT	7	2016-08-23
<i>Anguilla rostrata</i>	American Eel	LT	1	1992-09-21
<i>Apalone mutica</i>	Smooth Softshell	LE	2	2017-07-12
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	1	1947-07-03
<i>Etheostoma histrio</i>	Harlequin Darter	LE	3	1968-10-19
<i>Hybopsis amblops</i>	Bigeye Chub	LE	2	1950-07-23
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	2008-06-30
<i>Lethenteron appendix</i>	American Brook Lamprey	LT	2	2003-09-10
<i>Notropis anogenus</i>	Pugnose Shiner	LE	1	2000-09-05
<i>Penstemon tubaeformis</i>	Tube Beard Tongue	LE	1	1997-06-27

Total # of Species 10

De Witt

<i>Alasmodonta viridis</i>	Slippersnail	LT	1	2013-07-24
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	LE	1	2006
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	1	2010-04-30
<i>Elliptio dilatata</i>	Spike	LT	1	2009-10-01
<i>Lethenteron appendix</i>	American Brook Lamprey	LT	1	1983-03-12

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
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Total # of Species 5

DeKalb

<i>Alasmidonta viridis</i>	Slippershell	LT	7	2016-07-15
<i>Asclepias lanuginosa</i>	Wooly Milkweed	LE	1	1976-08-23
<i>Carex echinata</i>	Sedge	LE	1	1971-06-09
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	1	1961-10-08
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	3	2015-06
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	2	2016-07-13
<i>Etheostoma exile</i>	Iowa Darter	LT	2	1967-10-10
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	1	1993-08-14
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	1994
<i>Lethenteron appendix</i>	American Brook Lamprey	LT	1	1968-04-01
<i>Ligumia recta</i>	Black Sandshell	LT	2	2009-08-10
<i>Moxostoma valenciennesi</i>	Greater Redhorse	LE	1	2012-08-15
<i>Sambucus racemosa ssp. pubens</i>	Red-berried Elder	LE	1	1985

Total # of Species 13

Douglas

<i>Alasmidonta viridis</i>	Slippershell	LT	1	2001-09-06
<i>Carex arkansana</i>	Arkansas Sedge	LE	1	2004-07-01
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	3	2007-05
<i>Elliptio dilatata</i>	Spike	LT	2	2013-08-26
<i>Epioblasma triquetra</i>	Snuffbox	LE	3	2014-08-19
<i>Gallinula galeata</i>	Common Gallinule	LE	1	2004-06-02
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	2007-07-18
<i>Necturus maculosus</i>	Mudpuppy	LT	1	2012-06-04
<i>Ptychobranhus fasciolaris</i>	Kidneyshell	LE	4	2012-09-06
<i>Toxolasma lividus</i>	Purple Lilliput	LE	3	2014-08-11
<i>Villosa lienosa</i>	Little Spectaclecase	LT	11	2015-09

Total # of Species 11

DuPage

<i>Alasmidonta viridis</i>	Slippershell	LT	3	2005-06-28
<i>Amelanchier interior</i>	Shadbush	LT	6	2017-05-22
<i>Asclepias meadii</i>	Mead's Milkweed	LE	3	2011
<i>Asio flammeus</i>	Short-eared Owl	LE	3	2011-12-11
<i>Astragalus tennesseensis</i>	Tennessee Milk Vetch	LE	1	1996
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	2	1999-01-01
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	LE	8	2017-08-25
<i>Botaurus lentiginosus</i>	American Bittern	LE	1	2008

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>DuPage</u>				
<i>Carex bromoides</i>	Sedge	LT	1	2017-06-06
<i>Carex cryptolepis</i>	Sedge	LT	2	2017-07-07
<i>Carex tuckermanii</i>	Tuckerman's Sedge	LE	3	2017-06-06
<i>Carex viridula</i>	Little Green Sedge	LT	5	2017-07-07
<i>Chlidonias niger</i>	Black Tern	LE	3	1989
<i>Circus cyaneus</i>	Northern Harrier	LE	1	2011-12-11
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	3	1995-01-01
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	LT	6	2011-05-27
<i>Corallorhiza maculata</i>	Spotted Coral-root Orchid	LE	1	2010
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	1	2017-05-17
<i>Dalea foliosa</i>	Leafy Prairie Clover	LE	3	2017-08-07
<i>Egretta caerulea</i>	Little Blue Heron	LE	1	1995-08-06
<i>Elymus trachycaulus</i>	Bearded Wheat Grass	LE	1	2009-08-12
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	13	2016-12-12
<i>Etheostoma exile</i>	Iowa Darter	LT	2	2015-09-15
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	1	2016-06-28
<i>Fundulus diaphanus</i>	Banded Killifish	LT	2	2016-10-13
<i>Gallinula galeata</i>	Common Gallinule	LE	7	2007-09-04
<i>Iliamna remota</i>	Kankakee Mallow	LE	1	2017-07-16
<i>Isoetes butleri</i>	Quillwort	LE	1	2013-05-31
<i>Ixobrychus exilis</i>	Least Bittern	LT	5	2001-06
<i>Juncus alpinoarticulatus</i>	Richardson's Rush	LT	2	2015-08-17
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1988-07-01
<i>Laterallus jamaicensis</i>	Black Rail	LE	1	2000-01-01
<i>Lathyrus ochroleucus</i>	Pale Vetchling	LT	1	2017-04-26
<i>Lespedeza leptostachya</i>	Prairie Bush Clover	LE	2	2012-07
<i>Lycopodium clavatum</i>	Running Pine	LE	1	2001-12-03
<i>Melanthium virginicum</i>	Bunchflower	LT	1	2013
<i>Minuartia patula</i>	Slender Sandwort	LT	1	2017-10-20
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	2006-06-23
<i>Notropis anogenus</i>	Pugnose Shiner	LE	1	2010-09-30
<i>Notropis heterodon</i>	Blackchin Shiner	LT	1	2010-09-30
<i>Notropis heterolepis</i>	Blacknose Shiner	LE	1	2010-09-30
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	1	1997
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	22	2006-07-12
<i>Pandion haliaetus</i>	Osprey	LE	7	2017-04
<i>Penstemon tubaeflorus</i>	Tube Beard Tongue	LE	3	2013-07-11
<i>Plantago cordata</i>	Heart-leaved Plantain	LE	1	2010
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid	LE	3	2017-06-26
<i>Poa wolfii</i>	Wolf's Bluegrass	LE	1	2016-05-13
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	1	2006-08-05

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>DuPage</u>				
<i>Rallus elegans</i>	King Rail	LE	1	2005-05-05
<i>Rubus odoratus</i>	Purple-flowering Raspberry	LT	1	2016-06-28
<i>Rubus pubescens</i>	Dwarf Raspberry	LT	1	1979-10-28
<i>Scirpus hattorianus</i>	Bulrush	LE	3	2017-07-21
<i>Shepherdia canadensis</i>	Buffaloberry	LE	1	1980-03-10
<i>Sistrurus catenatus</i>	Massasauga	LE	1	1995
<i>Sisyrinchium montanum</i>	Mountain Blue-eyed Grass	LE	1	2017-05-29
<i>Somatochlora hineana</i>	Hine's Emerald Dragonfly	LE	1	2017-06
<i>Sparganium emersum</i>	Green-fruited Bur-reed	LE	1	2017-08-28
<i>Tetraneuris herbacea</i>	Lakeside Daisy	LE	1	2011
<i>Trifolium reflexum</i>	Buffalo Clover	LT	3	2012
<i>Tyto alba</i>	Barn Owl	LT	1	2013-08-20
<i>Ulmus thomasii</i>	Rock Elm	LE	1	2017
<i>Utricularia intermedia</i>	Flat-leaved Bladderwort	LT	1	1997-06-10
<i>Veronica scutellata</i>	Marsh Speedwell	LT	6	2017-08-08
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	4	2008
<u>Total # of Species</u>		<u>65</u>		

Edgar

<i>Ambystoma jeffersonianum</i>	Jefferson Salamander	LT	3	2009-03-20
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	1	2008-07-10
<i>Hybopsis amblops</i>	Bigeye Chub	LE	4	2011-08-10
<i>Hybopsis amnis</i>	Pallid Shiner	LE	1	2011-06-22
<i>Lethenteron appendix</i>	American Brook Lamprey	LT	1	1989-10-05
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	2012-06-06
<i>Necturus maculosus</i>	Mudpuppy	LT	1	2008-FA
<i>Notropis boops</i>	Bigeye Shiner	LE	4	1962-07-05
<i>Villosa lienosa</i>	Little Spectaclecase	LT	9	2015-08-19
<u>Total # of Species</u>		<u>9</u>		

Edwards

<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	4	2015-07-11
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	1	2014-06-24
<i>Silene regia</i>	Royal Catchfly	LE	1	2015-06-02
<i>Spiranthes vernalis</i>	Spring Ladies' Tresses	LE	1	2014
<i>Stenanthium gramineum</i>	Grass-leaved Lily	LT	1	2014-07-16
<i>Thamnophis sauritus</i>	Eastern Ribbon Snake	LT	1	2007-04-23
<i>Tyto alba</i>	Barn Owl	LT	3	2016-05-06
<u>Total # of Species</u>		<u>7</u>		

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Effingham</u>				
<i>Ammocrypta pellucidum</i>	Eastern Sand Darter	LT	1	1950-07-30
<i>Carex communis</i>	Fibrous-rooted Sedge	LT	1	1988-04-26
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	2	1994-07-25
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	2	1995
<i>Crystallaria asprella</i>	Crystal Darter	LT	1	1901-PRE
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	1	2009-05
<i>Hybopsis amblops</i>	Bigeye Chub	LE	1	1950-07-30
<i>Ixobrychus exilis</i>	Least Bittern	LT	2	2008-06-15
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	3	2008-06-22
<i>Notropis boops</i>	Bigeye Shiner	LE	2	1996-07-30
<i>Papaipema eryngii</i>	Eryngium Stem Borer	LT	1	2010
<i>Penstemon tubaeflorus</i>	Tube Beard Tongue	LE	1	2016-06-15
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	1	2007-06-12
<i>Sabatia campestris</i>	Prairie Rose Gentian	LE	2	2016-07-22
<i>Silene regia</i>	Royal Catchfly	LE	1	2017-07-11
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	2008-05-17
<i>Tympanuchus cupido</i>	Greater Prairie-Chicken	LE	1	2002-04-16
<i>Tyto alba</i>	Barn Owl	LT	3	2013-09-06
<u>Total # of Species</u>		<u>18</u>		

<u>Fayette</u>				
<i>Ammocrypta clarum</i>	Western Sand Darter	LE	6	2012-10-04
<i>Apalone mutica</i>	Smooth Softshell	LE	3	2017-08-02
<i>Carex bromoides</i>	Sedge	LT	1	1985-05-26
<i>Carex communis</i>	Fibrous-rooted Sedge	LT	1	1988-04-26
<i>Carex prasina</i>	Drooping Sedge	LT	1	2012-05-22
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	2	2009-04-17
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	LT	1	2001-07-20
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	1	2012-05-05
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	2000-06-28
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	2005-06-07
<i>Melanthium virginicum</i>	Bunchflower	LT	1	2011-06-29
<i>Melica mutica</i>	Two-flowered Melic Grass	LE	1	1990-05-15
<i>Myotis sodalis</i>	Indiana Bat	LE	2	2015-05-22
<i>Necturus maculosus</i>	Mudpuppy	LT	1	2012-11-04
<i>Pandion haliaetus</i>	Osprey	LE	1	2015-08-01
<i>Papaipema eryngii</i>	Eryngium Stem Borer	LT	1	2010
<i>Penstemon tubaeflorus</i>	Tube Beard Tongue	LE	1	2014
<i>Plantago cordata</i>	Heart-leaved Plantain	LE	1	2009-10-28
<i>Plethobasus cyphus</i>	Sheepnose	LE	1	1956-08-23
<i>Sabatia campestris</i>	Prairie Rose Gentian	LE	3	2016-07-22

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Fayette</u>				
<i>Sanguisorba canadensis</i>	American Burnet	LE	1	2009
<i>Sistrurus catenatus</i>	Massasauga	LE	1	1956-08-10
<i>Stenanthium gramineum</i>	Grass-leaved Lily	LT	1	2002-07-25
<i>Tympanuchus cupido</i>	Greater Prairie-Chicken	LE	1	2002-04-16
<i>Tyto alba</i>	Barn Owl	LT	2	2014-06
<u>Total # of Species</u> <u>25</u>				

<u>Ford</u>				
<i>Alasmidonta viridis</i>	Slippershell	LT	3	2009-08-14
<i>Ammocrypta pellucidum</i>	Eastern Sand Darter	LT	1	1962-06-26
<i>Asclepias meadii</i>	Mead's Milkweed	LE	1	1998-03
<i>Asio flammeus</i>	Short-eared Owl	LE	1	2016-03-04
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	2	2016-06-27
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	1	2015-10-20
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	1	2017-07-08
<i>Lampsilis fasciola</i>	Wavy-rayed Lampmussel	LE	1	1999-09-10
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	2014-08-29
<i>Myotis sodalis</i>	Indiana Bat	LE	1	2015-07-24
<i>Notropis boops</i>	Bigeye Shiner	LE	1	1962-07-06
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	1	2009-06-05
<i>Tyto alba</i>	Barn Owl	LT	1	1990-08-17
<i>Villosa lienosa</i>	Little Spectaclecase	LT	4	2017-06-08
<u>Total # of Species</u> <u>14</u>				

<u>Franklin</u>				
<i>Cimicifuga racemosa</i>	False Bugbane	LE	1	2001-08-08
<i>Egretta caerulea</i>	Little Blue Heron	LE	1	1998-07-27
<i>Moxostoma carinatum</i>	River Redhorse	LT	1	1988-08-17
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	2012-07-28
<i>Myotis sodalis</i>	Indiana Bat	LE	1	2017-08-04
<i>Potamogeton pulcher</i>	Spotted Pondweed	LE	1	1952-10-02
<i>Pseudemys concinna</i>	River Cooter	LE	1	1985-04-28
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	2005-04-28
<i>Trillium viride</i>	Green Trillium	LE	1	1982-04-30
<i>Tyto alba</i>	Barn Owl	LT	4	2014-07-20
<u>Total # of Species</u> <u>10</u>				

<u>Fulton</u>				
<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	1	2010-04-22
<i>Anguilla rostrata</i>	American Eel	LT	3	2011-07-18

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Fulton</u>				
<i>Apalone mutica</i>	Smooth Softshell	LE	2	2012-06-20
<i>Asio flammeus</i>	Short-eared Owl	LE	1	2014-04-10
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	2	2008-05-15
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	2	2016-09-27
<i>Botaurus lentiginosus</i>	American Bittern	LE	1	1983-06
<i>Fundulus dispar</i>	Starhead Topminnow	LT	4	2013-10-15
<i>Gallinula galeata</i>	Common Gallinule	LE	2	2015-09-07
<i>Ixobrychus exilis</i>	Least Bittern	LT	2	2015
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	4	2011-10-24
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	1987-07-07
<i>Myotis sodalis</i>	Indiana Bat	LE	1	2004-08-10
<i>Notropis chalybaeus</i>	Ironcolor Shiner	LT	1	2013-07-22
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	2	2015
<i>Pandion haliaetus</i>	Osprey	LE	5	2017-07-06
<i>Poa wolfii</i>	Wolf's Bluegrass	LE	1	2004-05-26
<i>Rallus elegans</i>	King Rail	LE	1	1988-05-26
<i>Tradescantia bracteata</i>	Prairie Spiderwort	LE	1	2016-05-20
<i>Trifolium reflexum</i>	Buffalo Clover	LT	1	2005-06-22
<i>Tyto alba</i>	Barn Owl	LT	1	2013-05-23

Total # of Species 21

Gallatin

<i>Anguilla rostrata</i>	American Eel	LT	1	1977-07-11
<i>Apalone mutica</i>	Smooth Softshell	LE	1	1993-08-09
<i>Asplenium bradleyi</i>	Bradley's Spleenwort	LE	1	1997-07-22
<i>Carex communis</i>	Fibrous-rooted Sedge	LT	1	1959-05-12
<i>Carex oxylepis</i>	Sharp-scaled Sedge	LT	2	2015
<i>Cimicifuga rubifolia</i>	Black Cohosh	LE	1	2003-11-04
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	3	2016-06-19
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	1	2011-06-30
<i>Dichanthelium yadkinense</i>	Panic Grass	LE	1	2008-10-17
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	1	2000-09-19
<i>Etheostoma histrio</i>	Harlequin Darter	LE	1	1997-10-08
<i>Fusconaia ebena</i>	Ebonysnail	LE	1	2014-09-23
<i>Huperzia porophila</i>	Cliff Clubmoss	LT	1	2011-07-13
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	10	2005-11-03
<i>Ligumia recta</i>	Black Sandshell	LT	1	2014-09-23
<i>Lithasia obovata</i>	Shawnee Rocksnail	LE	5	2012-07-11
<i>Myotis grisescens</i>	Gray Bat	LE	2	2011-07-25
<i>Myotis leibii</i>	Eastern Small-footed Myotis	LT	1	2015-07-11
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	2016-06-15

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Gallatin</u>				
<i>Myotis sodalis</i>	Indiana Bat	LE	3	2017-04-09
<i>Neotoma floridana</i>	Eastern Wood Rat	LE	1	2014-08-01
<i>Orconectes indianensis</i>	Indiana Crayfish	LE	4	2005-06-29
<i>Phaeophyscia leana</i>	Lea's Bog Lichen	LT	11	2015-12-08
<i>Potamilus capax</i>	Fat Pocketbook	LE	9	2014-09-23
<i>Pseudemys concinna</i>	River Cooter	LE	1	2006-08-16
<i>Quercus montana</i>	Rock Chestnut Oak	LT	1	1999-08
<i>Sedum telephioides</i>	American Orpine	LT	3	2013-04-21
<i>Stenanthium gramineum</i>	Grass-leaved Lily	LT	1	2008-10-17
<i>Tyto alba</i>	Barn Owl	LT	1	2011-06-06

Total # of Species **29**

<u>Greene</u>				
<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	1	1996-04
<i>Agalinis skinneriana</i>	Pale False Foxglove	LT	2	2002-10-03
<i>Anguilla rostrata</i>	American Eel	LT	2	2014-08-19
<i>Apalone mutica</i>	Smooth Softshell	LE	1	1985
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	1	1980-10-01
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	4	2016-08-07
<i>Hesperia metea</i>	Cobweb Skipper	LE	1	1983-04-26
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	1994-SUM
<i>Moxostoma carinatum</i>	River Redhorse	LT	1	2006-08-22
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	2017-05-16
<i>Necturus maculosus</i>	Mudpuppy	LT	1	2007
<i>Polygala incarnata</i>	Pink Milkwort	LE	1	1977-07-17
<i>Tradescantia bracteata</i>	Prairie Spiderwort	LE	1	2017

Total # of Species **13**

<u>Grundy</u>				
<i>Aflexia rubranura</i>	Redveined Prairie Leafhopper	LT	1	2004-08-12
<i>Alasmidonta viridis</i>	Slippershell	LT	2	2013-10-07
<i>Anguilla rostrata</i>	American Eel	LT	1	2016-05-25
<i>Asio flammeus</i>	Short-eared Owl	LE	1	2016-03-10
<i>Aster furcatus</i>	Forked Aster	LT	1	1975-08-31
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	1980-05-20
<i>Botaurus lentiginosus</i>	American Bittern	LE	1	1991
<i>Calopogon oklahomensis</i>	Oklahoma grass pink orchid	LE	1	2016-06-09
<i>Calopogon tuberosus</i>	Grass Pink Orchid	LE	1	1997-06-25
<i>Canis lupus</i>	Gray/timber Wolf	LT	1	2015-02-13
<i>Caprimulgus carolinensis</i>	Chuck-will's-widow	LT	2	2012-05-26

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Grundy</u>				
<i>Circus cyaneus</i>	Northern Harrier	LE	1	2002-SUM
<i>Cyclonaias tuberculata</i>	Purple Wartyback	LT	1	2014-10-27
<i>Dalea foliosa</i>	Leafy Prairie Clover	LE	1	2003-07-18
<i>Drosera intermedia</i>	Narrow-leaved Sundew	LT	1	2012-07-10
<i>Elliptio dilatata</i>	Spike	LT	1	2003-10-02
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	3	2017-07-09
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	1	2005-07
<i>Fundulus diaphanus</i>	Banded Killifish	LT	5	2017-06
<i>Gallinula galeata</i>	Common Gallinule	LE	1	1991-07-12
<i>Hybopsis amnis</i>	Pallid Shiner	LE	2	2014-09-14
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	1982-06-01
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	1988
<i>Leptodea leptodon</i>	Scaleshell Mussel	LE	1	2013-05-14
<i>Ligumia recta</i>	Black Sandshell	LT	3	2017-08-30
<i>Malvastrum hispidum</i>	False Mallow	LE	1	2001
<i>Minuartia patula</i>	Slender Sandwort	LT	1	1997-06-10
<i>Moxostoma carinatum</i>	River Redhorse	LT	4	2017-04-23
<i>Moxostoma valenciennesi</i>	Greater Redhorse	LE	4	2005-07-13
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	2005-07-28
<i>Notropis boops</i>	Bigeye Shiner	LE	2	1968-06-27
<i>Notropis chalybaeus</i>	Ironcolor Shiner	LT	1	1986-07-17
<i>Notropis heterolepis</i>	Blacknose Shiner	LE	4	2014-06-24
<i>Papaipema eryngii</i>	Eryngium Stem Borer	LT	2	2016-08-05
<i>Pinus banksiana</i>	Jack Pine	LE	1	1982-08-11
<i>Pinus resinosa</i>	Red Pine	LE	1	1982-08-11
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid	LE	1	2017
<i>Rallus elegans</i>	King Rail	LE	1	1994-07-07
<i>Speyeria idalia</i>	Regal Fritillary	LT	1	2013
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	2015-05-08

Total # of Species **40**

Hamilton

<i>Styrax americana</i>	Storax	LT	1	2001-08-14
<i>Tyto alba</i>	Barn Owl	LT	7	2016-05-31

Total # of Species **2**

Hancock

<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	1	2002-08-07
<i>Agalinis skinneriana</i>	Pale False Foxglove	LT	1	2015-09-30
<i>Anguilla rostrata</i>	American Eel	LT	2	2014

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Hancock</u>				
<i>Apalone mutica</i>	Smooth Softshell	LE	1	2016-09-07
<i>Asclepias meadii</i>	Mead's Milkweed	LE	1	2010
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	2	2016-06-14
<i>Carex prasina</i>	Drooping Sedge	LT	1	2017-08-04
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	1	1994-07
<i>Crystallaria asprella</i>	Crystal Darter	LT	1	1877
<i>Cumberlandia monodonta</i>	Spectaclecase	LE	2	2005-09-22
<i>Ellipsaria lineolata</i>	Butterfly	LT	6	2015-07-21
<i>Fundulus diaphanus</i>	Banded Killifish	LT	3	2016-06-29
<i>Fusconaia ebena</i>	Ebonysnail	LE	1	1995-06-15
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1989-06-10
<i>Ligumia recta</i>	Black Sandshell	LT	5	2015-07-21
<i>Melanthium virginicum</i>	Bunchflower	LT	4	2017-06-22
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	2015-06-13
<i>Myotis sodalis</i>	Indiana Bat	LE	1	2015-06-17
<i>Necturus maculosus</i>	Mudpuppy	LT	1	1916-08-29
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid	LE	2	2001-06-18
<i>Plethobasus cyphus</i>	Sheepnose	LE	2	1992-10-17
<i>Pleurobema cordatum</i>	Ohio Pigtoe	LE	1	2014-09-04
<i>Tradescantia bracteata</i>	Prairie Spiderwort	LE	1	2017-05-02
<u>Total # of Species</u> <u>23</u>				

<u>Hardin</u>				
<i>Anguilla rostrata</i>	American Eel	LT	2	1995-10-02
<i>Asplenium bradleyi</i>	Bradley's Spleenwort	LE	1	1997-07-22
<i>Carex nigromarginata</i>	Black-edged Sedge	LE	1	2011-05-20
<i>Carex oxylepis</i>	Sharp-scaled Sedge	LT	6	2015
<i>Carex willdenowii</i>	Willdenow's Sedge	LT	1	2011-05-20
<i>Carya pallida</i>	Pale Hickory	LE	1	1992-07-13
<i>Chamaelirium luteum</i>	Fairy Wand	LE	3	2009-05-22
<i>Chimaphila maculata</i>	Spotted Wintergreen	LE	2	2015
<i>Cimicifuga rubifolia</i>	Black Cohosh	LE	6	2014-07-25
<i>Crangonyx packardii</i>	Packard's Cave Amphipod	LE	3	1978-PRE
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	4	2016-06-19
<i>Cryptobranchus alleganiensis</i>	Hellbender	LE	1	1956-06
<i>Dichanthelium ravenelii</i>	Panic Grass	LE	3	2015-10-06
<i>Dodecatheon frenchii</i>	French's Shootingstar	LT	1	1948-04-26
<i>Euonymus americanus</i>	American Strawberry Bush	LT	1	2014-09-11
<i>Gastrophryne carolinensis</i>	Eastern Narrowmouth Toad	LT	1	1962-08-13
<i>Hexalectris spicata</i>	Crested Coralroot Orchid	LE	2	2017-07-26
<i>Lampetra aepyptera</i>	Least Brook Lamprey	LT	2	2005-04-11

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Hardin</u>				
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	1	2005-07-05
<i>Ligumia recta</i>	Black Sandshell	LT	1	2014-08-27
<i>Melothria pendula</i>	Squirting Cucumber	LT	3	2013-08-23
<i>Moxostoma carinatum</i>	River Redhorse	LT	1	2017-08-22
<i>Myotis austroriparius</i>	Southeastern Myotis	LE	5	2017-02-10
<i>Myotis grisescens</i>	Gray Bat	LE	6	2015-06-02
<i>Myotis leibii</i>	Eastern Small-footed Myotis	LT	1	2012-08-06
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	6	2015-02-05
<i>Myotis sodalis</i>	Indiana Bat	LE	6	2017-02-10
<i>Necturus maculosus</i>	Mudpuppy	LT	1	2017-04-02
<i>Neotoma floridana</i>	Eastern Wood Rat	LE	1	2014-08-01
<i>Orconectes indianensis</i>	Indiana Crayfish	LE	3	2017-05-17
<i>Orconectes kentuckiensis</i>	Kentucky Crayfish	LE	7	2017-05-17
<i>Orconectes placidus</i>	Bigclaw Crayfish	LE	2	2013-06-15
<i>Oxalis illinoensis</i>	Illinois Wood Sorrel	LT	2	2015-05-27
<i>Phaeophyscia leana</i>	Lea's Bog Lichen	LT	3	1991
<i>Potamilus capax</i>	Fat Pocketbook	LE	3	2014-08-28
<i>Pseudemys concinna</i>	River Cooter	LE	1	2012-07-10
<i>Quercus montana</i>	Rock Chestnut Oak	LT	1	2000-03
<i>Sanicula smallii</i>	Southern Black Snakeroot	LE	1	2015-10-06
<i>Saxifraga virginensis</i>	Early Saxifrage	LE	4	2008-10-17
<i>Scirpus polyphyllus</i>	Bulrush	LT	1	1993-06-26
<i>Scleria pauciflora</i>	Carolina Whipgrass	LE	1	1991-06-15
<i>Sedum telephioides</i>	American Orpine	LT	2	2015
<i>Silene ovata</i>	Ovate Catchfly	LE	4	2016-05-27
<i>Stellaria pubera</i>	Great Chickweed	LE	1	1998-09-25
<i>Tilia heterophylla</i>	White Basswood	LE	1	2014-09-11
<i>Trichomanes boschianum</i>	Filmy Fern	LE	1	1999-04-07
<i>Vaccinium stamineum</i>	Deerberry	LE	1	2015-06-02

Total # of Species 47

Henderson

<i>Besseyia bullii</i>	Kittentails	LT	2	2015
<i>Cumberlandia monodonta</i>	Spectaclecase	LE	1	2015-08-28
<i>Delphinium carolinianum</i>	Wild Blue Larkspur	LT	4	2017-06-06
<i>Ellipsaria lineolata</i>	Butterfly	LT	4	2015-08-28
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	2	2012-05-07
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	LT	2	1997-08-04
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	1	2017-07-26
<i>Kinosternon flavescens</i>	Yellow Mud Turtle	LE	3	1982-06-25
<i>Lampsilis higginsii</i>	Higgins Eye	LE	2	2015-08-28

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Henderson</u>				
<i>Ligumia recta</i>	Black Sandshell	LT	4	2013-08-21
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	1997-08-04
<i>Myotis sodalis</i>	Indiana Bat	LE	1	1989-07-12
<i>Notropis texanus</i>	Weed Shiner	LE	1	1986-08-21
<i>Penstemon grandiflorus</i>	Large-flowered Beard Tongue	LE	2	2017-06-06
<i>Pinus banksiana</i>	Jack Pine	LE	1	2015
<i>Salvia azurea</i>	Blue Sage	LT	1	1980s-MID
<i>Stylisma pickeringii</i>	Patterson's Bindweed	LE	1	2016-07-25
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	1995-09-15
<u>Total # of Species</u>		<u>18</u>		

<u>Henry</u>				
<i>Anguilla rostrata</i>	American Eel	LT	1	1978-06-05
<i>Asclepias meadii</i>	Mead's Milkweed	LE	1	2010
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	2	2006-06-09
<i>Crystallaria asprella</i>	Crystal Darter	LT	1	1901-PRE
<i>Cyclonaias tuberculata</i>	Purple Wartyback	LT	1	1990-09-28
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	2	1996-05-21
<i>Fundulus dispar</i>	Starhead Topminnow	LT	1	2007-06-04
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	LT	1	2006-06
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	1	2014-07-28
<i>Hybopsis amnis</i>	Pallid Shiner	LE	1	1925
<i>Kinosternon flavescens</i>	Yellow Mud Turtle	LE	1	2009-05-22
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	2009-05
<i>Ligumia recta</i>	Black Sandshell	LT	1	1988-10-18
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	4	2016-08-09
<i>Nothocalais cuspidata</i>	Prairie Dandelion	LE	1	1937-05-18
<i>Notropis boops</i>	Bigeye Shiner	LE	1	1983-08-17
<i>Notropis heterolepis</i>	Blacknose Shiner	LE	2	2007-04-19
<i>Notropis texanus</i>	Weed Shiner	LE	3	2014-07-29
<i>Orobancha ludoviciana</i>	Broomrape	LT	1	2016-06
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid	LE	1	2016-07-07
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	1	2013-08-21
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	1997-PRE
<u>Total # of Species</u>		<u>22</u>		

<u>Iroquois</u>				
<i>Alasmodonta viridis</i>	Slippershell	LT	1	2010-07-12
<i>Asio flammeus</i>	Short-eared Owl	LE	1	2017-01-15
<i>Baptisia tinctoria</i>	Yellow Wild Indigo	LE	1	2015-07-21

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Iroquois</u>				
<i>Calephelis muticum</i>	Swamp Metalmark	LE	1	2009-06-28
<i>Calopogon tuberosus</i>	Grass Pink Orchid	LE	1	2016-07-05
<i>Carex cumulata</i>	Sedge	LE	2	2015-07-07
<i>Cyclonaias tuberculata</i>	Purple Wartback	LT	5	2012-08-22
<i>Drosera intermedia</i>	Narrow-leaved Sundew	LT	1	2012-07-13
<i>Elliptio dilatata</i>	Spike	LT	6	2012-08-22
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	1	2017-06-27
<i>Fundulus dispar</i>	Starhead Topminnow	LT	5	2012-11-20
<i>Helianthus giganteus</i>	Tall Sunflower	LE	1	1978-09-08
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	LT	1	2009-09-15
<i>Hymenopappus scabiosaeus</i>	Old Plainsman	LT	1	2017-06-01
<i>Hypericum adpressum</i>	Shore St. John's Wort	LE	1	2017-07-24
<i>Ligumia recta</i>	Black Sandshell	LT	10	2012-08-22
<i>Lycopodium dendroideum</i>	Ground Pine	LE	1	2015-04-03
<i>Moxostoma carinatum</i>	River Redhorse	LT	2	2013-07-11
<i>Necturus maculosus</i>	Mudpuppy	LT	1	2010-07-27
<i>Notropis chalybaeus</i>	Ironcolor Shiner	LT	9	2015-10-08
<i>Notropis heterolepis</i>	Blacknose Shiner	LE	1	1962-10-30
<i>Notropis texanus</i>	Weed Shiner	LE	8	2015-10-12
<i>Platanthera ciliaris</i>	Orange Fringed Orchid	LE	1	2017-07-28
<i>Platanthera clavellata</i>	Wood Orchid	LE	1	2017-07-24
<i>Platanthera flava</i>	Tubercled Orchid	LT	2	2016-07-05
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid	LE	1	2017
<i>Polygala incarnata</i>	Pink Milkwort	LE	1	1989-08-03
<i>Polygonum careyi</i>	Carey's Heartsease	LE	1	2015-11-18
<i>Rubus schneideri</i>	Bristly Blackberry	LT	5	2015-09-01
<i>Scleria pauciflora</i>	Carolina Whipgrass	LE	1	2001-07-25
<i>Sisyrinchium atlanticum</i>	Eastern Blue-eyed Grass	LE	2	2017-06-07
<i>Speyeria idalia</i>	Regal Fritillary	LT	1	2017-06-22
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	2015-10
<i>Tyto alba</i>	Barn Owl	LT	1	2010-07-01
<i>Vaccinium corymbosum</i>	Highbush Blueberry	LE	1	2001-10-03
<i>Valerianella umbilicata</i>	Corn Salad	LE	1	2004-06-26
<i>Veronica scutellata</i>	Marsh Speedwell	LT	2	2015-07-30
<i>Villosa lienosa</i>	Little Spectaclecase	LT	1	2014-08-06
<i>Viola primulifolia</i>	Primrose Violet	LE	1	2016-11-04
<u>Total # of Species</u>		<u>39</u>		

Jackson

<i>Ammocrypta clarum</i>	Western Sand Darter	LE	1	2003-04-19
<i>Anguilla rostrata</i>	American Eel	LT	1	1974-10-17

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
Jackson				
<i>Apalone mutica</i>	Smooth Softshell	LE	1	2006-06-06
<i>Asplenium bradleyi</i>	Bradley's Spleenwort	LE	1	2011-10-17
<i>Botrychium biternatum</i>	Southern Grape Fern	LE	4	1991-08-01
<i>Caprimulgus carolinensis</i>	Chuck-will's-widow	LT	2	2017-06-18
<i>Carex alata</i>	Winged Sedge	LE	1	1993-06-24
<i>Carex arkansana</i>	Arkansas Sedge	LE	2	2017-06-26
<i>Carex physorhyncha</i>	Bellows Beak Sedge	LE	1	1968-05-16
<i>Carex plantaginea</i>	Plantain-leaved Sedge	LE	1	1953-04-17
<i>Carex prasina</i>	Drooping Sedge	LT	1	2015-05-01
<i>Carex willdenowii</i>	Willdenow's Sedge	LT	1	2010-07-30
<i>Cimicifuga rubifolia</i>	Black Cohosh	LE	1	1999-08-17
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	LE	1	2001-03-23
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	7	2017-07-01
<i>Cynosciadium digitatum</i>	Cynosciadium	LE	3	2015
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	2	2012-06-25
<i>Dodecatheon frenchii</i>	French's Shootingstar	LT	6	2017-05-13
<i>Gallinula galeata</i>	Common Gallinule	LE	1	1993-06-28
<i>Gastrophryne carolinensis</i>	Eastern Narrowmouth Toad	LT	1	2013-07-14
<i>Glyceria arkansana</i>	Arkansas Mannagrass	LE	2	2015-10-09
<i>Halesia carolina</i>	Silverbell Tree	LE	1	2000-04-16
<i>Hexalectris spicata</i>	Crested Coralroot Orchid	LE	1	1974-08
<i>Huperzia porophila</i>	Cliff Clubmoss	LT	1	1977-09-15
<i>Hydrolea uniflora</i>	One-flowered Hydrolea	LE	1	2015-10-09
<i>Hyla avivoca</i>	Bird-voiced Treefrog	LT	1	1992-07
<i>Ictinia mississippiensis</i>	Mississippi Kite	LT	3	2014-08
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	1989-02
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	1990
<i>Limnothlypis swainsonii</i>	Swainson's Warbler	LE	3	2009
<i>Lonicera flava</i>	Yellow Honeysuckle	LE	2	2003-06-06
<i>Macrhybopsis gelida</i>	Sturgeon Chub	LE	1	2015-07-21
<i>Matelea decipiens</i>	Climbing Milkweed	LE	1	1993
<i>Melanthium virginicum</i>	Bunchflower	LT	1	1941-06-10
<i>Melothria pendula</i>	Squirting Cucumber	LT	2	1986-PRE
<i>Moxostoma carinatum</i>	River Redhorse	LT	1	1997-07-09
<i>Myotis grisescens</i>	Gray Bat	LE	1	2003-01-23
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	4	2015-02-06
<i>Myotis sodalis</i>	Indiana Bat	LE	7	2015-02-06
<i>Neotoma floridana</i>	Eastern Wood Rat	LE	4	2017-04-20
<i>Notropis boops</i>	Bigeye Shiner	LE	1	1988-06-20
<i>Orconectes placidus</i>	Bigclaw Crayfish	LE	1	2003-03-07
<i>Oxalis illinoensis</i>	Illinois Wood Sorrel	LT	1	2003-05-16

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Jackson</u>				
<i>Pinus echinata</i>	Shortleaf Pine	LE	2	1986-PRE
<i>Plantago cordata</i>	Heart-leaved Plantain	LE	2	2011-06-09
<i>Poa alsodes</i>	Grove Bluegrass	LE	1	2008-06-04
<i>Potamogeton pulcher</i>	Spotted Pondweed	LE	1	1952-10-02
<i>Ptilimnium nuttallii</i>	Mock Bishop's Weed	LE	1	2000-08-25
<i>Quercus montana</i>	Rock Chestnut Oak	LT	1	2017-05-02
<i>Rhexia mariana</i>	Dull Meadow Beauty	LE	1	1973-07-26
<i>Sedum telephioides</i>	American Orpine	LT	1	2017-03-31
<i>Spiranthes vernalis</i>	Spring Ladies' Tresses	LE	1	2011-06-23
<i>Synandra hispidula</i>	Hairy Synandra	LT	5	2017-05-13
<i>Torreyochloa pallida</i>	Grass	LE	1	1993-05-25
<i>Trifolium reflexum</i>	Buffalo Clover	LT	2	2017-07-04
<i>Tyto alba</i>	Barn Owl	LT	5	2016-06-03
<i>Urtica chamaedryoides</i>	Nettle	LT	1	1990-07-10
<u>Total # of Species</u>		<u>57</u>		

<u>Jasper</u>				
<i>Ammocrypta pellucidum</i>	Eastern Sand Darter	LT	9	2017-09-14
<i>Apalone mutica</i>	Smooth Softshell	LE	2	2017-08-31
<i>Asio flammeus</i>	Short-eared Owl	LE	2	2014-12-23
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	2013-05-22
<i>Botaurus lentiginosus</i>	American Bittern	LE	1	2013-06-03
<i>Circus cyaneus</i>	Northern Harrier	LE	3	2014-12-23
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	LT	1	1998-06-25
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	1	1998-05-18
<i>Etheostoma histrio</i>	Harlequin Darter	LE	1	1967-09-18
<i>Ixobrychus exilis</i>	Least Bittern	LT	2	2015-06-22
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	3	2015-07
<i>Laterallus jamaicensis</i>	Black Rail	LE	1	2012-06-20
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	1	1995-05-24
<i>Penstemon tubaeformis</i>	Tube Beard Tongue	LE	3	2017-05-28
<i>Rallus elegans</i>	King Rail	LE	1	2015-06-07
<i>Schoenoplectus purshianus</i>	Pursh's Bulrush	LE	1	2012
<i>Silene regia</i>	Royal Catchfly	LE	1	2015-05-12
<i>Spiranthes vernalis</i>	Spring Ladies' Tresses	LE	2	2014-09-01
<i>Sternula antillarum</i>	Least Tern	LE	1	2004-06-13
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	2	2017-07-03
<i>Tracaulon arifolium</i>	Halberd-leaved Tearthumb	LE	1	1985-08-14
<i>Tympanuchus cupido</i>	Greater Prairie-Chicken	LE	2	2016-02-17
<i>Tyto alba</i>	Barn Owl	LT	2	2014-05-27

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Total # of Species</u>		<u>23</u>		
<u>Jefferson</u>				
<i>Hybognathus hayi</i>	Cypress Minnow	LE	1	1940
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	1989
<i>Notropis anogenus</i>	Pugnose Shiner	LE	1	1940
<i>Pandion haliaetus</i>	Osprey	LE	1	2017
<i>Pseudemys concinna</i>	River Cooter	LE	1	1985-04-28
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	2017-05-26
<i>Tyto alba</i>	Barn Owl	LT	9	2017-05-26

Total # of Species 7

Jersey

<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	1	1996-04
<i>Agalinis skinneriana</i>	Pale False Foxglove	LT	1	2002-08-29
<i>Anguilla rostrata</i>	American Eel	LT	3	2013-09-09
<i>Astragalus crassicaulus</i> var. <i>trich</i>	Large Ground Plum	LE	1	1998-05-06
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	2	2017-09-28
<i>Buchnera americana</i>	Blue Hearts	LT	1	2011-07-26
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	4	2017-04
<i>Draba cuneifolia</i>	Whitlow Grass	LE	1	2008-05-01
<i>Ellipsaria lineolata</i>	Butterfly	LT	1	1998-10-01
<i>Fundulus dispar</i>	Starhead Topminnow	LT	2	1967-06-19
<i>Fusconaia ebena</i>	Ebonysnail	LE	1	1998-09-30
<i>Ictinia mississippiensis</i>	Mississippi Kite	LT	1	1999-07-10
<i>Ligumia recta</i>	Black Sandshell	LT	1	1998
<i>Myotis grisescens</i>	Gray Bat	LE	1	2012-06-20
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	2015-02-19
<i>Myotis sodalis</i>	Indiana Bat	LE	8	2017-06-13
<i>Necturus maculosus</i>	Mudpuppy	LT	2	2007
<i>Notropis boops</i>	Bigeye Shiner	LE	1	1960-06-01
<i>Pantherophis emoryi</i>	Great Plains Ratsnake	LE	1	1999-10-11
<i>Thryomanes bewickii</i>	Bewick's Wren	LE	1	1983-05-24

Total # of Species 20

Jo Daviess

<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	1	2011-10-25
<i>Adoxa moschatellina</i>	Moschatel	LE	1	1986-05-23
<i>Alasmidonta viridis</i>	Slippershell	LT	1	2010-09-14
<i>Amelanchier interior</i>	Shadbush	LT	2	1995
<i>Ammocrypta clarum</i>	Western Sand Darter	LE	3	2017-09-18

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Jo Daviess</u>				
<i>Anguilla rostrata</i>	American Eel	LT	3	1986-07-11
<i>Asclepias lanuginosa</i>	Woolly Milkweed	LE	1	1995
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	2	2013
<i>Besseyia bullii</i>	Kittentails	LT	2	2017-06-09
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	LE	3	2017-08-06
<i>Botrychium multifidum</i>	Northern Grape Fern	LE	1	1978-08-23
<i>Bouteloua gracilis</i>	Blue Grama	LE	1	2011-09-30
<i>Canis lupus</i>	Gray/timber Wolf	LT	3	2013-03-08
<i>Caprimulgus carolinensis</i>	Chuck-will's-widow	LT	1	2015-06-03
<i>Carex heliophila</i>	Plains Sedge	LE	1	2014-05-09
<i>Carex prasina</i>	Drooping Sedge	LT	1	1996-06-25
<i>Ceanothus herbaceus</i>	Redroot	LE	2	2006-06-07
<i>Circaea alpina</i>	Small Enchanter's Nightshade	LE	2	1987
<i>Clematis occidentalis</i>	Mountain Clematis	LE	1	2003-08-20
<i>Conioselinum chinense</i>	Hemlock Parsley	LE	1	1996-09-19
<i>Corylus cornuta</i>	Beaked Hazelnut	LE	1	1992-07-16
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	4	2017-04-19
<i>Crystallaria asprella</i>	Crystal Darter	LT	1	2015-10-13
<i>Cyperus grayoides</i>	Umbrella Sedge	LT	1	1997
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	1	2014-05-20
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	1	2008-08
<i>Discus macclintocki</i>	Iowa Pleistocene Snail	LE	1	1994-08-31
<i>Ellipsaria lineolata</i>	Butterfly	LT	4	2015-07-17
<i>Elymus trachycaulus</i>	Bearded Wheat Grass	LE	1	1997
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	3	2007-07-12
<i>Equisetum pratense</i>	Meadow Horsetail	LT	6	2011-10-13
<i>Equisetum scirpoides</i>	Dwarf Scouring Rush	LE	1	1978-08-23
<i>Gymnocarpium dryopteris</i>	Oak Fern	LE	1	1991
<i>Hackelia deflexa</i> var. <i>americana</i>	Stickseed	LE	3	1995-06-27
<i>Hemidactylium scutatum</i>	Four-toed Salamander	LT	2	2017-04-18
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	LT	1	2015-07-23
<i>Hudsonia tomentosa</i>	False Heather	LE	1	2015-08
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	2	1993-08-21
<i>Hybopsis amnis</i>	Pallid Shiner	LE	7	2017-10-30
<i>Juniperus communis</i>	Ground Juniper	LT	1	1994-06-08
<i>Lampsilis higginsii</i>	Higgins Eye	LE	2	2015-07-17
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	2014-06
<i>Lathyrus ochroleucus</i>	Pale Vetchling	LT	2	1996-06-26
<i>Ligumia recta</i>	Black Sandshell	LT	5	2015-07-17
<i>Luzula acuminata</i>	Hairy Woodrush	LE	1	2008-FA
<i>Mirabilis hirsuta</i>	Hairy Umbrella-wort	LE	2	2003-08

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Jo Daviess</u>				
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	7	2016-02-17
<i>Myotis sodalis</i>	Indiana Bat	LE	2	2015-02-24
<i>Nocomis micropogon</i>	River Chub	LE	1	1972-05-09
<i>Nothocalais cuspidata</i>	Prairie Dandelion	LE	1	2014-05-09
<i>Notropis texanus</i>	Weed Shiner	LE	2	2017-10-31
<i>Opuntia fragilis</i>	Fragile Prickly Pear	LE	1	2011-09-23
<i>Pinus banksiana</i>	Jack Pine	LE	1	1996-10-18
<i>Polanisia jamesii</i>	James' Clammyweed	LE	1	2015-08
<i>Primula mistassinica</i>	Bird's-eye Primrose	LE	1	2017-07-21
<i>Rosa acicularis</i>	Bristly Rose	LE	2	2003-08-20
<i>Salvia azurea</i>	Blue Sage	LT	1	1997
<i>Schizachne purpurascens</i>	False Melic Grass	LE	1	2013
<i>Solidago sciaphila</i>	Cliff Goldenrod	LT	8	2016-11-01
<i>Speyeria idalia</i>	Regal Fritillary	LT	1	2015-06-26
<i>Stygobromus iowae</i>	Iowa Amphipod	LE	1	1965-11-30
<i>Sullivantia sullivantii</i>	Sullivantia	LT	3	2014-05-20
<i>Symphoricarpos albus var. albus</i>	Snowberry	LE	1	1995
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	2016-06
<i>Tropidoclonion lineatum</i>	Lined Snake	LT	1	2015-08-10
<i>Ulmus thomasii</i>	Rock Elm	LE	1	1988-05-19
<i>Viola blanda</i>	Hairy White Violet	LE	1	1968
<i>Viola canadensis</i>	Canada Violet	LE	4	2016-05-14
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	1	1992-07-08
<i>Zigadenus elegans</i>	White Camass	LE	2	2017-07-21

Total # of Species 70

Johnson

<i>Asclepias meadii</i>	Mead's Milkweed	LE	1	2015-05-20
<i>Botrychium biternatum</i>	Southern Grape Fern	LE	2	2010-08-04
<i>Caprimulgus carolinensis</i>	Chuck-will's-widow	LT	2	2015-06-03
<i>Carex bromoides</i>	Sedge	LT	1	2016-07-24
<i>Carex decomposita</i>	Cypress-knee Sedge	LE	2	2008-10-15
<i>Carex gigantea</i>	Large Sedge	LE	1	2014-09-12
<i>Carex intumescens</i>	Swollen Sedge	LE	5	2013-09-17
<i>Carex oxylepis</i>	Sharp-scaled Sedge	LT	5	2015
<i>Carex willdenowii</i>	Willdenow's Sedge	LT	3	2009-05-20
<i>Carya aquatica</i>	Water Hickory	LT	3	2013-09-17
<i>Cimicifuga rubifolia</i>	Black Cohosh	LE	1	2014-08-27
<i>Circus cyaneus</i>	Northern Harrier	LE	1	2002-06-17
<i>Clematis crispa</i>	Blue Jasmine	LE	1	2009-05-21
<i>Clematis viorna</i>	Leatherflower	LE	1	1969-06-11

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
Johnson				
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	LE	4	2015-02-06
<i>Crangonyx packardii</i>	Packard's Cave Amphipod	LE	3	1997-04-19
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	1	2000-07-13
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	1	1989-04-27
<i>Dennstaedtia punctilobula</i>	Hay-scented Fern	LE	1	2017-05-14
<i>Desmognathus conanti</i>	Spotted Dusky Salamander	LE	2	2013-03-13
<i>Dichanthelium jorii</i>	Panic Grass	LE	2	2008
<i>Dodecatheon frenchii</i>	French's Shootingstar	LT	7	2017-04-29
<i>Dryopteris celsa</i>	Log Fern	LE	1	2005-05-08
<i>Euonymus americanus</i>	American Strawberry Bush	LT	4	2015-10-03
<i>Huperzia porophila</i>	Cliff Clubmoss	LT	1	2015-09-19
<i>Hybognathus hayi</i>	Cypress Minnow	LE	1	1997-11-09
<i>Hydrolea uniflora</i>	One-flowered Hydrolea	LE	2	2010-08-19
<i>Hyla avivoca</i>	Bird-voiced Treefrog	LT	7	2015-10-03
<i>Ictinia mississippiensis</i>	Mississippi Kite	LT	3	2010-07-03
<i>Lampetra aepyptera</i>	Least Brook Lamprey	LT	1	2005-11
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1990-06
<i>Lepomis symmetricus</i>	Bantam Sunfish	LT	1	2004-05-12
<i>Limnothlypis swainsonii</i>	Swainson's Warbler	LE	1	1977
<i>Lysimachia radicans</i>	Creeping Loosestrife	LE	4	2011-09-26
<i>Matelea decipiens</i>	Climbing Milkweed	LE	1	2013-08-13
<i>Melothria pendula</i>	Squirting Cucumber	LT	3	2017-09-29
<i>Myotis austroriparius</i>	Southeastern Myotis	LE	8	2016-06-24
<i>Myotis grisescens</i>	Gray Bat	LE	2	1991-07-15
<i>Myotis leibii</i>	Eastern Small-footed Myotis	LT	3	2015-07-03
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	5	2015-06-17
<i>Myotis sodalis</i>	Indiana Bat	LE	3	2015-06-25
<i>Neotoma floridana</i>	Eastern Wood Rat	LE	1	2017-03-31
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	4	2010-06-28
<i>Orconectes indianensis</i>	Indiana Crayfish	LE	2	2007-06-27
<i>Planera aquatica</i>	Water Elm	LT	3	2017-08-17
<i>Plantago cordata</i>	Heart-leaved Plantain	LE	1	2015-05-31
<i>Platanthera flava</i>	Tubercled Orchid	LT	4	2017-17-16
<i>Quercus phellos</i>	Willow Oak	LT	1	1987-06
<i>Rhynchospora glomerata</i>	Clustered Beaked Rush	LE	1	1999-08-31
<i>Salvia azurea</i>	Blue Sage	LT	1	2017-09-11
<i>Scleria pauciflora</i>	Carolina Whipgrass	LE	1	2008-06-23
<i>Spiranthes vernalis</i>	Spring Ladies' Tresses	LE	2	2011-07-19
<i>Stenanthium gramineum</i>	Grass-leaved Lily	LT	2	2017-08-17
<i>Styrax americana</i>	Storax	LT	6	2016-07-24
<i>Talinum parviflorum</i>	Small Flower-of-an-hour	LT	5	2017-06-22

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Johnson</u>				
<i>Thamnophis sauritus</i>	Eastern Ribbon Snake	LT	2	2012-03-30
<i>Thryomanes bewickii</i>	Bewick's Wren	LE	2	1981-05-09
<i>Trichomanes boschianum</i>	Filmy Fern	LE	3	2017-04-29
<i>Tyto alba</i>	Barn Owl	LT	9	2015-06-16
<u>Total # of Species</u> <u>59</u>				

<u>Kane</u>				
<i>Alasmodonta viridis</i>	Slippershell	LT	9	2016-07-14
<i>Alnus incana ssp. rugosa</i>	Speckled Alder	LE	2	2016-03-30
<i>Amelanchier interior</i>	Shadbush	LT	1	2017-05-18
<i>Amelanchier sanguinea</i>	Shadbush	LE	1	2017-10-20
<i>Asclepias lanuginosa</i>	Woolly Milkweed	LE	2	2015-06-11
<i>Aster furcatus</i>	Forked Aster	LT	2	2017-10-20
<i>Besseyia bullii</i>	Kittentails	LT	1	2017-05-08
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	LE	7	2017-08-10
<i>Botrychium campestre</i>	Prairie moonwort	LE	1	2017-05-26
<i>Buteo swainsoni</i>	Swainson's Hawk	LE	11	2014-04-25
<i>Calephelis muticum</i>	Swamp Metalmark	LE	1	2013-SU
<i>Calopogon tuberosus</i>	Grass Pink Orchid	LE	1	2017-06-21
<i>Canis lupus</i>	Gray/timber Wolf	LT	1	2009-12-17
<i>Carex aurea</i>	Golden Sedge	LT	2	2014-06-24
<i>Carex brunnescens</i>	Brownish Sedge	LE	1	2017-10-20
<i>Carex communis</i>	Fibrous-rooted Sedge	LT	1	2017-10-20
<i>Carex cryptolepis</i>	Sedge	LT	1	2007-07-19
<i>Carex oligosperma</i>	Few-seeded Sedge	LE	1	1972-06
<i>Chamaedaphne calyculata</i>	Leatherleaf	LT	1	1994-08-10
<i>Chlidonias niger</i>	Black Tern	LE	3	2002-06-17
<i>Cimicifuga racemosa</i>	False Bugbane	LE	1	2017-10-20
<i>Circus cyaneus</i>	Northern Harrier	LE	1	2017-02-25
<i>Corallorhiza maculata</i>	Spotted Coral-root Orchid	LE	1	1994-07-30
<i>Cyclonaias tuberculata</i>	Purple Wartyback	LT	1	1994-08-17
<i>Dalea foliosa</i>	Leafy Prairie Clover	LE	1	2016-08-18
<i>Drosera intermedia</i>	Narrow-leaved Sundew	LT	1	1972-05-29
<i>Elliptio dilatata</i>	Spike	LT	5	2010-08-25
<i>Elymus trachycaulus</i>	Bearded Wheat Grass	LE	1	1991-08-02
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	16	2017-06-21
<i>Etheostoma exile</i>	Iowa Darter	LT	5	2017-05-10
<i>Fundulus dispar</i>	Starhead Topminnow	LT	2	2007-07-10
<i>Gallinula galeata</i>	Common Gallinule	LE	5	2011-07-23
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	2	1998-06-05
<i>Ixobrychus exilis</i>	Least Bittern	LT	5	2017-06-12

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Kane</u>				
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	1989-06-08
<i>Lechea intermedia</i>	Pinweed	LE	1	1977-08-22
<i>Ligumia recta</i>	Black Sandshell	LT	2	2009-06-12
<i>Melanthium virginicum</i>	Bunchflower	LT	1	2017-07-01
<i>Menyanthes trifoliata</i>	Buckbean	LT	1	2017-08-30
<i>Moxostoma carinatum</i>	River Redhorse	LT	3	2003-06-06
<i>Moxostoma valenciennesi</i>	Greater Redhorse	LE	2	2017-08-14
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	2011-08-03
<i>Nannothemis bella</i>	Elfin Skimmer	LT	1	2007-06-10
<i>Notropis anogenus</i>	Pugnose Shiner	LE	1	2016-06-22
<i>Notropis boops</i>	Bigeye Shiner	LE	1	2008-08-08
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	5	2004
<i>Pandion haliaetus</i>	Osprey	LE	3	2017
<i>Phalaropus tricolor</i>	Wilson's Phalarope	LE	1	2008-Sum
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid	LE	3	2017
<i>Potamogeton pulcher</i>	Spotted Pondweed	LE	1	1992
<i>Ranunculus rhomboideus</i>	Prairie Buttercup	LT	1	2017-04-11
<i>Rubus odoratus</i>	Purple-flowering Raspberry	LT	1	2017-10-20
<i>Rubus pubescens</i>	Dwarf Raspberry	LT	1	1993-05-08
<i>Silene regia</i>	Royal Catchfly	LE	4	2017-07-19
<i>Sparganium americanum</i>	American Bur-reed	LE	1	1980-07-09
<i>Sparganium emersum</i>	Green-fruited Bur-reed	LE	2	2017-08-28
<i>Spiranthes lucida</i>	Yellow-lipped Ladies' Tresses	LE	1	2005
<i>Symphoricarpos albus</i> var. <i>albus</i>	Snowberry	LE	1	2013-07-09
<i>Tofieldia glutinosa</i>	False Asphodel	LT	1	2002
<i>Triglochin maritima</i>	Common Bog Arrow Grass	LT	2	1997
<i>Triglochin palustris</i>	Slender Bog Arrow Grass	LT	1	2017-09-04
<i>Trillium erectum</i>	Ill-scented Trillium	LE	1	2015-05-13
<i>Ulmus thomasii</i>	Rock Elm	LE	1	1956-09-19
<i>Utricularia intermedia</i>	Flat-leaved Bladderwort	LT	1	1991-06
<i>Veronica americana</i>	American Brooklime	LE	2	2001-07-02
<i>Veronica scutellata</i>	Marsh Speedwell	LT	1	2001-07-02
<i>Viola blanda</i>	Hairy White Violet	LE	2	2017-10-20
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	6	2011-05-12
<i>Zigadenus elegans</i>	White Camass	LE	1	1967-07

Total # of Species 69

Kankakee

<i>Alasmodonta viridis</i>	Slippershell	LT	1	2005-09-22
<i>Anguilla rostrata</i>	American Eel	LT	5	2015-07-08
<i>Aster furcatus</i>	Forked Aster	LT	1	1978-08-09

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Kankakee</u>				
<i>Baptisia tinctoria</i>	Yellow Wild Indigo	LE	1	2015-07-21
<i>Calephelis muticum</i>	Swamp Metalmark	LE	1	2009-06-28
<i>Carex cumulata</i>	Sedge	LE	4	2016-08-23
<i>Carex viridula</i>	Little Green Sedge	LT	2	1997-01-01
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	LT	1	2015-05-16
<i>Comptonia peregrina</i>	Sweetfern	LE	1	2017-08-09
<i>Cyclonaias tuberculata</i>	Purple Wartyback	LT	7	2016-09-28
<i>Drosera intermedia</i>	Narrow-leaved Sundew	LT	2	2016-08-18
<i>Elliptio dilatata</i>	Spike	LT	7	2013-08-14
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	5	2017-06-27
<i>Fundulus diaphanus</i>	Banded Killifish	LT	1	1949
<i>Fundulus dispar</i>	Starhead Topminnow	LT	10	2016-09-19
<i>Geranium bicknellii</i>	Northern Cranesbill	LE	2	2011-07-31
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	LT	1	1996-08-11
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	1	1994-08-24
<i>Hybopsis amblops</i>	Bigeye Chub	LE	1	2004-05-02
<i>Hybopsis amnis</i>	Pallid Shiner	LE	2	2014-09-08
<i>Hymenopappus scabiosaeus</i>	Old Plainsman	LT	2	2017-06-01
<i>Hypericum adpressum</i>	Shore St. John's Wort	LE	2	2017-07-24
<i>Ichthyomyzon fossor</i>	Northern Brook Lamprey	LE	3	1991
<i>Iliamna remota</i>	Kankakee Mallow	LE	1	2017-07-15
<i>Lethenteron appendix</i>	American Brook Lamprey	LT	4	2010-07-29
<i>Ligumia recta</i>	Black Sandshell	LT	7	2016-09-28
<i>Melica mutica</i>	Two-flowered Melic Grass	LE	1	1942-07-02
<i>Moxostoma carinatum</i>	River Redhorse	LT	7	2016-10-27
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	3	2015-08-14
<i>Necturus maculosus</i>	Mudpuppy	LT	2	2016-04
<i>Notropis anogenus</i>	Pugnose Shiner	LE	1	1977-07-19
<i>Notropis boops</i>	Bigeye Shiner	LE	1	1983-07-13
<i>Notropis chalybaeus</i>	Ironcolor Shiner	LT	13	2016-09-19
<i>Notropis heterolepis</i>	Blacknose Shiner	LE	6	2014-07-24
<i>Notropis texanus</i>	Weed Shiner	LE	13	2016-10-13
<i>Platanthera ciliaris</i>	Orange Fringed Orchid	LE	1	2017-07-28
<i>Plethobasus cyphus</i>	Sheepnose	LE	4	2010-08-18
<i>Polygala incarnata</i>	Pink Milkwort	LE	1	1981-SUM
<i>Polygonum careyi</i>	Carey's Heartsease	LE	5	2017-08-25
<i>Rubus schneideri</i>	Bristly Blackberry	LT	3	2015-09-01
<i>Schoenoplectus hallii</i>	Hall's Bulrush	LT	1	1993-10-26
<i>Schoenoplectus purshianus</i>	Pursh's Bulrush	LE	1	2002-08
<i>Scirpus hattorianus</i>	Bulrush	LE	1	1982-07
<i>Scleria muhlenbergii</i>	Muhlenberg's Nut Rush	LE	1	2002-08-09

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Kankakee</u>				
<i>Scleria pauciflora</i>	Carolina Whipgrass	LE	2	2015
<i>Simpsonaias ambigua</i>	Salamander Mussel	LE	3	1994-08-23
<i>Sisyrinchium atlanticum</i>	Eastern Blue-eyed Grass	LE	2	2017-06-07
<i>Sparganium emersum</i>	Green-fruited Bur-reed	LE	1	1996-08-15
<i>Speyeria idalia</i>	Regal Fritillary	LT	2	2017-06-22
<i>Styrax americana</i>	Storax	LT	1	2013-09-30
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	6	2016-05
<i>Trifolium reflexum</i>	Buffalo Clover	LT	1	1884-06-13
<i>Vaccinium corymbosum</i>	Highbush Blueberry	LE	1	2015
<i>Valerianella umbilicata</i>	Corn Salad	LE	1	2017-06-29
<i>Veronica scutellata</i>	Marsh Speedwell	LT	1	2008
<i>Viola primulifolia</i>	Primrose Violet	LE	5	2017-05-15
<u>Total # of Species</u> <u>56</u>				

<u>Kendall</u>				
<i>Alasmodonta viridis</i>	Slippershell	LT	2	2017-05-17
<i>Aster furcatus</i>	Forked Aster	LT	1	1983-09-05
<i>Carex bromoides</i>	Sedge	LT	2	2001
<i>Cimicifuga racemosa</i>	False Bugbane	LE	1	2015-06-03
<i>Cypripedium reginae</i>	Showy Lady's Slipper	LE	1	2001-06-10
<i>Eleocharis rostellata</i>	Beaked Spike Rush	LT	1	2001-07-02
<i>Etheostoma exile</i>	Iowa Darter	LT	2	2014-07-23
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1985-06-24
<i>Mimulus glabratus</i>	Yellow Monkey Flower	LE	1	2016-08-27
<i>Moxostoma carinatum</i>	River Redhorse	LT	4	2017-06-01
<i>Moxostoma valenciennesi</i>	Greater Redhorse	LE	5	2015-09-28
<i>Pandion haliaetus</i>	Osprey	LE	1	2002-08-01
<i>Plantago cordata</i>	Heart-leaved Plantain	LE	1	1991-04-22
<i>Rhamnus alnifolia</i>	Alder Buckthorn	LE	1	1999-07-20
<i>Scirpus hattorianus</i>	Bulrush	LE	1	2001
<i>Triglochin palustris</i>	Slender Bog Arrow Grass	LT	1	1997-09-02
<i>Ulmus thomasii</i>	Rock Elm	LE	1	2012
<i>Veronica americana</i>	American Brooklime	LE	2	2005-06-23
<u>Total # of Species</u> <u>18</u>				

<u>Knox</u>				
<i>Apalone mutica</i>	Smooth Softshell	LE	1	2013-07-18
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	1988-05-18
<i>Hemidactylium scutatum</i>	Four-toed Salamander	LT	2	2015-05-01
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	2	2015-08-27

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Knox</u>				
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	1	2010-05-06
<i>Melanthium virginicum</i>	Bunchflower	LT	1	1902-06
<i>Sistrurus catenatus</i>	Massasauga	LE	1	2010-FA
<u>Total # of Species</u>		<u>7</u>		

La Salle

<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	1	2015-04-16
<i>Alasmidonta viridis</i>	Slippershell	LT	5	2013-10-07
<i>Amelanchier sanguinea</i>	Shadbush	LE	1	1998-12-09
<i>Anguilla rostrata</i>	American Eel	LT	1	2016-08-08
<i>Aster furcatus</i>	Forked Aster	LT	4	2017-09-15
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	2005-05-28
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	1	2013
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	LE	1	2013-07-28
<i>Canis lupus</i>	Gray/timber Wolf	LT	1	2013-12
<i>Carex communis</i>	Fibrous-rooted Sedge	LT	3	2013-10-10
<i>Carex plantaginea</i>	Plantain-leaved Sedge	LE	1	2006-05-25
<i>Cornus canadensis</i>	Bunchberry	LE	1	1980s
<i>Corydalis aurea</i>	Golden Corydalis	LE	1	1998-05-03
<i>Corydalis sempervirens</i>	Pink Corydalis	LE	1	1998-05-03
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	2	2000-07
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	1	1961-05-30
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	2	2008-06-16
<i>Dichanthelium portoricense</i>	Hemlock Panic Grass	LE	1	1998-08-20
<i>Elliptio dilatata</i>	Spike	LT	1	2010-08-23
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	2	2001-04-28
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	2	2002-10-01
<i>Fundulus diaphanus</i>	Banded Killifish	LT	5	2016-10-20
<i>Hemidactylium scutatum</i>	Four-toed Salamander	LT	2	2016-04-26
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1987-07-16
<i>Luzula acuminata</i>	Hairy Woodrush	LE	3	2002-04-26
<i>Moxostoma carinatum</i>	River Redhorse	LT	9	2017-06-01
<i>Moxostoma valenciennesi</i>	Greater Redhorse	LE	3	2004-07-07
<i>Myotis grisescens</i>	Gray Bat	LE	1	2013-11-21
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	3	2015-11-18
<i>Myotis sodalis</i>	Indiana Bat	LE	5	2015-11-18
<i>Notropis heterolepis</i>	Blacknose Shiner	LE	2	2013-10-24
<i>Notropis texanus</i>	Weed Shiner	LE	1	2013-10-14
<i>Phegopteris connectilis</i>	Long Beech Fern	LE	1	2011-09-13
<i>Pinus resinosa</i>	Red Pine	LE	1	2001-10
<i>Plantago cordata</i>	Heart-leaved Plantain	LE	1	1990-11-13

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>La Salle</u>				
<i>Poa languida</i>	Weak Bluegrass	LE	1	1995
<i>Sambucus racemosa ssp. pubens</i>	Red-berried Elder	LE	4	2014-04-23
<i>Solidago sciaphila</i>	Cliff Goldenrod	LT	4	2015-09-25
<i>Speyeria idalia</i>	Regal Fritillary	LT	1	2003-07-04
<i>Symphoricarpos albus var. albus</i>	Snowberry	LE	1	1991
<i>Veronica americana</i>	American Brooklime	LE	1	1999-09-10
<u>Total # of Species</u>		<u>41</u>		

<u>Lake</u>				
<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	1	2017-05-12
<i>Aflexia rubranura</i>	Redveined Prairie Leafhopper	LT	2	2004-08-31
<i>Agalinis skinneriana</i>	Pale False Foxglove	LT	2	2016-08-16
<i>Alnus incana ssp. rugosa</i>	Speckled Alder	LE	1	1961-09-22
<i>Amelanchier interior</i>	Shadbush	LT	5	2016
<i>Amelanchier sanguinea</i>	Shadbush	LE	3	2009-06-26
<i>Ammophila breviligulata</i>	Marram Grass	LT	4	2017-08-26
<i>Andromeda glaucophylla</i>	Bog Rosemary	LE	1	2013-06-12
<i>Arctostaphylos uva-ursi</i>	Bearberry	LE	2	2017-08-26
<i>Asio flammeus</i>	Short-eared Owl	LE	1	2016-12-03
<i>Aster furcatus</i>	Forked Aster	LT	7	2017-08-26
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	1996
<i>Beckmannia syzigachne</i>	American Slough Grass	LE	1	1971-08
<i>Betula alleghaniensis</i>	Yellow Birch	LE	2	2009-05-15
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	1	2000-11-09
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	LE	4	2017-09-22
<i>Botaurus lentiginosus</i>	American Bittern	LE	3	2017-06-20
<i>Cakile edentula</i>	Sea Rocket	LT	7	2017-08-26
<i>Calla palustris</i>	Water Arum	LE	1	2017-06-10
<i>Calopogon tuberosus</i>	Grass Pink Orchid	LE	5	2017-07-11
<i>Canis lupus</i>	Gray/timber Wolf	LT	1	2005-02-18
<i>Cardamine pratensis var. palustris</i>	Cuckoo Flower	LE	2	2002-08-30
<i>Carex aurea</i>	Golden Sedge	LT	9	2017-06-28
<i>Carex bromoides</i>	Sedge	LT	4	2017-06-29
<i>Carex brunnescens</i>	Brownish Sedge	LE	2	2009-06-06
<i>Carex canescens var. disjuncta</i>	Sedge	LE	1	2015-05-22
<i>Carex chordorrhiza</i>	Cordroot Sedge	LE	2	2015-05-28
<i>Carex crawfordii</i>	Sedge	LE	2	1994-07-17
<i>Carex cryptolepis</i>	Sedge	LT	5	2013-06-11
<i>Carex diandra</i>	Sedge	LE	2	1978-06-13
<i>Carex disperma</i>	Shortleaf Sedge	LE	4	2016-06-06
<i>Carex echinata</i>	Sedge	LE	2	2014-06-12

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Lake</u>				
<i>Carex formosa</i>	Sedge	LE	1	1992-07-01
<i>Carex garberi</i>	Sedge	LE	1	2017-07-06
<i>Carex intumescens</i>	Swollen Sedge	LE	1	2006-05-31
<i>Carex oligosperma</i>	Few-seeded Sedge	LE	1	2009-06-23
<i>Carex trisperma</i>	Three-seeded Sedge	LE	3	2016-06-06
<i>Carex tuckermanii</i>	Tuckerman's Sedge	LE	3	2017-06-29
<i>Carex viridula</i>	Little Green Sedge	LT	8	2017-08-02
<i>Castilleja sessiliflora</i>	Downy Yellow Painted Cup	LE	1	2017-06-22
<i>Catostomus catostomus</i>	Longnose Sucker	LT	3	2017-07-19
<i>Ceanothus herbaceus</i>	Redroot	LE	2	2017-05-30
<i>Chamaedaphne calyculata</i>	Leatherleaf	LT	2	2017-05-06
<i>Chamaesyce polygonifolia</i>	Seaside Spurge	LE	4	2017-08-26
<i>Charadrius melodus</i>	Piping Plover	LE	1	2016-06-13
<i>Chlidonias niger</i>	Black Tern	LE	9	2017-08-06
<i>Cimicifuga racemosa</i>	False Bugbane	LE	2	2007-06-20
<i>Circus cyaneus</i>	Northern Harrier	LE	2	2017-06-09
<i>Cirsium pitcheri</i>	Pitcher's (Dune) Thistle	LT	1	2017-08-01
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	1	1984
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	LT	2	2017-06-06
<i>Coregonus artedi</i>	Cisco	LT	3	2004
<i>Cornus canadensis</i>	Bunchberry	LE	1	1976
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	5	2013-06-07
<i>Cypripedium reginae</i>	Showy Lady's Slipper	LE	3	2013-08-22
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	2	2017-06-09
<i>Drosera rotundifolia</i>	Round-leaved Sundew	LE	4	2017-07-29
<i>Eleocharis olivacea</i>	Capitate Spikerush	LE	1	1988-09-02
<i>Eleocharis pauciflora</i>	Few-flowered Spikerush	LE	2	2014-08-09
<i>Eleocharis rostellata</i>	Beaked Spike Rush	LT	3	2009-09-04
<i>Elymus trachycaulus</i>	Bearded Wheat Grass	LE	6	2007-06-23
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	17	2017-10-21
<i>Epilobium strictum</i>	Downy Willow Herb	LT	8	2009-09-15
<i>Eriophorum virginicum</i>	Rusty Cotton Grass	LE	3	2014-08-31
<i>Etheostoma exile</i>	Iowa Darter	LT	35	2017-10-03
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	3	2017-08-05
<i>Fundulus diaphanus</i>	Banded Killifish	LT	16	2017-10-03
<i>Fundulus dispar</i>	Starhead Topminnow	LT	10	2017-06-27
<i>Gallinula galeata</i>	Common Gallinule	LE	14	2013-07-02
<i>Geranium bicknellii</i>	Northern Cranesbill	LE	5	2013-06-24
<i>Helianthus giganteus</i>	Tall Sunflower	LE	2	2015
<i>Hypericum kalmianum</i>	Kalm's St. John's Wort	LE	4	2017-08-26
<i>Incisalia polios</i>	Hoary Elf	LE	1	2016-05-04

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Lake</u>				
<i>Ixobrychus exilis</i>	Least Bittern	LT	8	2017-06-12
<i>Juncus alpinoarticulatus</i>	Richardson's Rush	LT	5	2017
<i>Juniperus communis</i>	Ground Juniper	LT	4	2017-08-26
<i>Juniperus horizontalis</i>	Trailing Juniper	LE	1	2017-08-26
<i>Kinosternon flavescens</i>	Yellow Mud Turtle	LE	1	1972-01-01
<i>Larix laricina</i>	Tamarack	LT	6	2017-06-10
<i>Lathyrus ochroleucus</i>	Pale Vetchling	LT	12	2017-07-25
<i>Lechea intermedia</i>	Pinweed	LE	1	2004-08-23
<i>Lonicera dioica</i> var. <i>glaucescens</i>	Red Honeysuckle	LE	3	2017-08-15
<i>Lycaeides melissa samuelis</i>	Karner Blue Butterfly	LE	1	2001-08-12
<i>Megalodonta beckii</i>	Water Marigold	LE	3	2003-10-15
<i>Menyanthes trifoliata</i>	Buckbean	LT	8	2017-06-10
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	2006-08-07
<i>Notropis anogenus</i>	Pugnose Shiner	LE	7	2014
<i>Notropis heterodon</i>	Blackchin Shiner	LT	20	2017-10-03
<i>Notropis heterolepis</i>	Blacknose Shiner	LE	9	2017-06-27
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	15	2015-08-27
<i>Orobanche fasciculata</i>	Clustered Broomrape	LE	3	2017-06-17
<i>Pandion haliaetus</i>	Osprey	LE	1	2017-05-10
<i>Phalaropus tricolor</i>	Wilson's Phalarope	LE	2	2010-05-14
<i>Pinus banksiana</i>	Jack Pine	LE	1	2002-01-23
<i>Platanthera clavellata</i>	Wood Orchid	LE	2	2017-07-24
<i>Platanthera flava</i>	Tuberclad Orchid	LT	6	2017-07-04
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid	LE	13	2017-07-09
<i>Platanthera psycodes</i>	Purple Fringed Orchid	LE	4	2017-05-26
<i>Poa alsodes</i>	Grove Bluegrass	LE	3	1997
<i>Poa languida</i>	Weak Bluegrass	LE	1	1990-06-19
<i>Pogonia ophioglossoides</i>	Snake-mouth	LE	2	2015-07-01
<i>Polygonatum pubescens</i>	Downy Solomon's Seal	LT	5	2016-05-12
<i>Populus balsamifera</i>	Balsam Poplar	LE	3	2015-08-12
<i>Potamogeton gramineus</i>	Grass-leaved Pondweed	LT	11	2013
<i>Potamogeton praelongus</i>	White-stemmed Pondweed	LE	8	2012-08
<i>Potamogeton robbinsii</i>	Fern Pondweed	LE	5	2003-09-25
<i>Potamogeton strictifolius</i>	Stiff Pondweed	LE	1	1991-07-31
<i>Rallus elegans</i>	King Rail	LE	3	2013-06-22
<i>Rhamnus alnifolia</i>	Alder Buckthorn	LE	1	1970
<i>Rhynchospora alba</i>	Beaked Rush	LE	5	1995-07
<i>Ribes hirtellum</i>	Northern Gooseberry	LE	5	2002-07
<i>Rubus odoratus</i>	Purple-flowering Raspberry	LT	5	2016-07-08
<i>Rubus pubescens</i>	Dwarf Raspberry	LT	6	2016-05-20
<i>Salix serissima</i>	Autumn Willow	LE	3	2009-09-03

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Lake</u>				
<i>Salix syrticola</i>	Dune Willow	LE	1	2017-07-26
<i>Sarracenia purpurea</i>	Pitcher Plant	LE	5	2017-05-24
<i>Schoenoplectus smithii</i>	Smith's Bulrush	LE	1	2009-08-02
<i>Scirpus hattorianus</i>	Bulrush	LE	2	2009-07-24
<i>Scirpus microcarpus</i>	Small-fruited Bulrush	LE	3	2017-07-24
<i>Sedum telephioides</i>	American Orpine	LT	1	1948-06-14
<i>Shepherdia canadensis</i>	Buffaloberry	LE	3	2017-05-04
<i>Sistrurus catenatus</i>	Massasauga	LE	1	1995
<i>Sisyrinchium montanum</i>	Mountain Blue-eyed Grass	LE	2	1998
<i>Spiranthes lucida</i>	Yellow-lipped Ladies' Tresses	LE	1	2011-09-10
<i>Sterna forsteri</i>	Forster's Tern	LE	2	2008-07-31
<i>Sterna hirundo</i>	Common Tern	LE	3	2017-07-05
<i>Tofieldia glutinosa</i>	False Asphodel	LT	2	2017-08-24
<i>Trichophorum cespitosum</i>	Tufted Bulrush	LE	1	1965
<i>Trientalis borealis</i>	Star-flower	LE	3	2017-05-24
<i>Triglochin maritima</i>	Common Bog Arrow Grass	LT	7	2017-08-24
<i>Triglochin palustris</i>	Slender Bog Arrow Grass	LT	5	2013-08-08
<i>Trillium cernuum</i>	Nodding Trillium	LE	1	2013-06-01
<i>Trillium erectum</i>	Ill-scented Trillium	LE	2	2017-04-24
<i>Utricularia cornuta</i>	Horned Bladderwort	LE	1	2016-07-02
<i>Utricularia intermedia</i>	Flat-leaved Bladderwort	LT	4	2015-06-04
<i>Utricularia minor</i>	Small Bladderwort	LE	4	2009-09-09
<i>Utricularia subulata</i>	Hair Bladderwort	LE	1	2013-11-11
<i>Vaccinium corymbosum</i>	Highbush Blueberry	LE	2	2017-06-10
<i>Vaccinium macrocarpon</i>	Large Cranberry	LE	5	2005-11-13
<i>Vaccinium oxycoccos</i>	Small Cranberry	LE	3	2011-06-23
<i>Veronica scutellata</i>	Marsh Speedwell	LT	10	2017-07-05
<i>Viola blanda</i>	Hairy White Violet	LE	1	1990-05
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	16	2009-06-26
<u>Total # of Species 143</u>				

Lawrence

<i>Ammocrypta pellucidum</i>	Eastern Sand Darter	LT	2	2014-07-28
<i>Anguilla rostrata</i>	American Eel	LT	2	2015-09-04
<i>Apalone mutica</i>	Smooth Softshell	LE	1	2015-10-02
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	1985-06-14
<i>Carex alata</i>	Winged Sedge	LE	1	2015-04-21
<i>Carex arkansana</i>	Arkansas Sedge	LE	1	2017-07-26
<i>Carex bromoides</i>	Sedge	LT	2	2015-07-06
<i>Carex gigantea</i>	Large Sedge	LE	1	1995-06-15
<i>Carex prasina</i>	Drooping Sedge	LT	1	2012-05-21

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Lawrence</u>				
<i>Clematis viorna</i>	Leatherflower	LE	1	2001-06-14
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	LT	1	1999-06
<i>Crystallaria asprella</i>	Crystal Darter	LT	1	1888
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	2	2011-05-25
<i>Elliptio crassidens</i>	Elephant-ear	LE	2	2011-08-18
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	1	1960-11-27
<i>Fusconaia ebena</i>	Ebonysnail	LE	2	2011-08-18
<i>Gallinula galeata</i>	Common Gallinule	LE	1	1996-06-24
<i>Hemidactylium scutatum</i>	Four-toed Salamander	LT	1	2012-05-23
<i>Iresine rhizomatosa</i>	Bloodleaf	LE	2	2017-10-04
<i>Ixobrychus exilis</i>	Least Bittern	LT	2	2015-06
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	1998-04-23
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	1	1996-07-14
<i>Lithasia obovata</i>	Shawnee Rocksnail	LE	1	1928
<i>Lycopodium clavatum</i>	Running Pine	LE	1	1994-08-28
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	1988-08-23
<i>Myotis sodalis</i>	Indiana Bat	LE	1	1988-08-23
<i>Nocomis micropogon</i>	River Chub	LE	1	1964-08-28
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	2	2003-06-05
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	1	2014-06-05
<i>Penstemon tubaeformis</i>	Tube Beard Tongue	LE	1	1950-06-09
<i>Phalaropus tricolor</i>	Wilson's Phalarope	LE	1	2013-05-25
<i>Plethobasus cyphus</i>	Sheepnose	LE	1	1988-09-09
<i>Sabatia campestris</i>	Prairie Rose Gentian	LE	1	2000-07-18
<i>Silene regia</i>	Royal Catchfly	LE	4	2016-06-08
<i>Stenanthium gramineum</i>	Grass-leaved Lily	LT	1	2016-06-08
<i>Styrax americana</i>	Storax	LT	2	2016-06-08
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	2014-05-28
<i>Thamnophis sauritus</i>	Eastern Ribbon Snake	LT	3	2015-06-02
<i>Tracaulon arifolium</i>	Halberd-leaved Tearthumb	LE	2	2012-05-21
<i>Tyto alba</i>	Barn Owl	LT	2	2014-08-15
<u>Total # of Species</u> <u>40</u>				

Lee

<i>Apalone mutica</i>	Smooth Softshell	LE	1	2009-10-26
<i>Asclepias lanuginosa</i>	Woolly Milkweed	LE	2	1986-12-10
<i>Asio flammeus</i>	Short-eared Owl	LE	1	1990-05
<i>Aster furcatus</i>	Forked Aster	LT	1	2016-08-07
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	1998-06-12
<i>Besseyia bullii</i>	Kittentails	LT	2	2016-06-11
<i>Betula alleghaniensis</i>	Yellow Birch	LE	1	1998-07-10

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
Lee				
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	LE	2	2013-07-23
<i>Botrychium matricariifolium</i>	Daisyleaf Grape Fern	LE	1	2014-07-30
<i>Botrychium simplex</i>	Dwarf Grape Fern	LE	1	1971
<i>Calopogon tuberosus</i>	Grass Pink Orchid	LE	1	1989-10-09
<i>Castilleja sessiliflora</i>	Downy Yellow Painted Cup	LE	1	2016-06-11
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	LT	1	2007-07-25
<i>Comptonia peregrina</i>	Sweetfern	LE	1	1954-07-25
<i>Cyclonaias tuberculata</i>	Purple Wartyback	LT	1	1988-07-12
<i>Cystopteris laurentiana</i>	Laurentian Fragile Fern	LE	1	1989-PRE
<i>Drosera intermedia</i>	Narrow-leaved Sundew	LT	1	1989-10-09
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	10	2017-07-13
<i>Equisetum sylvaticum</i>	Woodland Horsetail	LE	1	1999-07-01
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	2	2003-08-08
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	2	2016-07-17
<i>Fundulus dispar</i>	Starhead Topminnow	LT	2	2008-10-16
<i>Gallinula galeata</i>	Common Gallinule	LE	1	2011-07-31
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	LT	3	2017-07-26
<i>Hudsonia tomentosa</i>	False Heather	LE	1	1988-08-23
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	1	1972-08-15
<i>Ichthyomyzon fossor</i>	Northern Brook Lamprey	LE	1	1998-04-12
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	1999-05-28
<i>Kinosternon flavescens</i>	Yellow Mud Turtle	LE	2	1989-05-31
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	2005-07-04
<i>Laterallus jamaicensis</i>	Black Rail	LE	1	1997-07-09
<i>Lechea intermedia</i>	Pinweed	LE	2	2014
<i>Lespedeza leptostachya</i>	Prairie Bush Clover	LE	2	2008
<i>Lethenteron appendix</i>	American Brook Lamprey	LT	1	2015-04-01
<i>Ligumia recta</i>	Black Sandshell	LT	2	2009-07-22
<i>Lycopodiella inundata</i>	Bog Clubmoss	LE	2	2001-07-06
<i>Mimulus glabratus</i>	Yellow Monkey Flower	LE	1	2006-04
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	4	2016-07-23
<i>Notropis texanus</i>	Weed Shiner	LE	1	2008-10-16
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	1	1990
<i>Orobanche ludoviciana</i>	Broomrape	LT	4	2015-09-28
<i>Platanthera clavellata</i>	Wood Orchid	LE	2	2001-07-06
<i>Platanthera flava</i>	Tuberclad Orchid	LT	4	2011-06-19
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid	LE	1	2017
<i>Polygala incarnata</i>	Pink Milkwort	LE	1	2006-06-30
<i>Ribes hirtellum</i>	Northern Gooseberry	LE	1	1981-08-30
<i>Rubus schneideri</i>	Bristly Blackberry	LT	1	1999-07-01
<i>Scleria muhlenbergii</i>	Muhlenberg's Nut Rush	LE	1	1991-07-27

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Lee</u>				
<i>Scleria pauciflora</i>	Carolina Whipgrass	LE	2	1969-08-27
<i>Sparganium americanum</i>	American Bur-reed	LE	1	2004-10-05
<i>Sparganium emersum</i>	Green-fruited Bur-reed	LE	1	1989-05-07
<i>Speyeria idalia</i>	Regal Fritillary	LT	4	2017-07-17
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	6	2017-06-19
<i>Woodsia ilvensis</i>	Rusty Woodsia	LE	1	2016-07-16
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	1	2002-06-15
<u>Total # of Species</u>		<u>55</u>		

<u>Livingston</u>				
<i>Alasmodonta viridis</i>	Slippershell	LT	1	2009-06-11
<i>Anguilla rostrata</i>	American Eel	LT	1	1990-09-05
<i>Asio flammeus</i>	Short-eared Owl	LE	1	2016-02-25
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	2	2005-06-22
<i>Elliptio dilatata</i>	Spike	LT	2	2012-07-24
<i>Moxostoma carinatum</i>	River Redhorse	LT	4	2014-08-12
<i>Moxostoma valenciennesi</i>	Greater Redhorse	LE	9	2014-08-11
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	3	2011-07-19
<i>Papaipema eryngii</i>	Eryngium Stem Borer	LT	1	2016-08-05
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	1	1976-09-24
<u>Total # of Species</u>		<u>10</u>		

<u>Logan</u>				
<i>Ammocrypta clarum</i>	Western Sand Darter	LE	1	2007-06-19
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	2016-06-25
<i>Lethenteron appendix</i>	American Brook Lamprey	LT	3	1997-07-14
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	1988-06-10
<i>Pseudacris illinoensis</i>	Illinois Chorus Frog	LT	2	2010-03-18
<u>Total # of Species</u>		<u>5</u>		

<u>Macon</u>				
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	1998-08
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	LE	1	2013-07-04
<i>Camassia angusta</i>	Wild Hyacinth	LE	1	2016-06-10
<i>Thryomanes bewickii</i>	Bewick's Wren	LE	1	1991-07-20
<u>Total # of Species</u>		<u>4</u>		

<u>Macoupin</u>				
<i>Astragalus crassicaupus</i> var. <i>trich</i>	Large Ground Plum	LE	3	2015-05-12
<i>Melanthium virginicum</i>	Bunchflower	LT	1	2012-05-24

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Macoupin</u>				
<i>Myotis sodalis</i>	Indiana Bat	LE	2	2015-05-27
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	1	2009-08-15
<i>Silene regia</i>	Royal Catchfly	LE	2	2017-06-27
<i>Sisyrinchium atlanticum</i>	Eastern Blue-eyed Grass	LE	2	1997-05-12
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	5	2016-07-26
<i>Trillium viride</i>	Green Trillium	LE	1	2000-11-08
<u>Total # of Species</u>		<u>8</u>		

<u>Madison</u>				
<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	2	2015-05-04
<i>Ammocrypta clarum</i>	Western Sand Darter	LE	1	1994-09-16
<i>Anguilla rostrata</i>	American Eel	LT	3	2015-04-15
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	2	2015-09
<i>Buchnera americana</i>	Blue Hearts	LT	1	1993-08-08
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	1	1998-09-28
<i>Cumberlandia monodonta</i>	Spectaclecase	LE	1	2008-12-04
<i>Egretta caerulea</i>	Little Blue Heron	LE	2	2014-07-14
<i>Ellipsaria lineolata</i>	Butterfly	LT	3	2014-06-16
<i>Fusconaia ebena</i>	Ebonyshell	LE	1	1991-06-15
<i>Gallinula galeata</i>	Common Gallinule	LE	2	2004-06-22
<i>Ictinia mississippiensis</i>	Mississippi Kite	LT	1	2008-08-12
<i>Ixobrychus exilis</i>	Least Bittern	LT	2	2015-06-25
<i>Ligumia recta</i>	Black Sandshell	LT	1	2014-09-25
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	2016-02-02
<i>Myotis sodalis</i>	Indiana Bat	LE	1	2015-02-11
<i>Notropis boops</i>	Bigeye Shiner	LE	1	1969-05-31
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	1	2008-06-06
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	1	1992-05-27
<i>Pseudacris illinoensis</i>	Illinois Chorus Frog	LT	1	2017-03-24
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE	2	2015-05-06
<i>Silene regia</i>	Royal Catchfly	LE	2	2017-07-10
<i>Sistrurus catenatus</i>	Massasauga	LE	2	2017-09-01
<i>Spiranthes vernalis</i>	Spring Ladies' Tresses	LE	1	2017-07-10
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	2	2012-05-24
<i>Tradescantia bracteata</i>	Prairie Spiderwort	LE	1	2002-11-13
<i>Tropidoclonion lineatum</i>	Lined Snake	LT	1	1965-04-18
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	1	1993-07-23
<u>Total # of Species</u>		<u>28</u>		

Marion

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Marion</u>				
<i>Asio flammeus</i>	Short-eared Owl	LE	2	2012-12-15
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	2	2011-06-07
<i>Caprimulgus carolinensis</i>	Chuck-will's-widow	LT	1	2015-06-04
<i>Circus cyaneus</i>	Northern Harrier	LE	2	2013-06-04
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	1	1967-05-16
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	2015-07
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	5	2012-05-08
<i>Laterallus jamaicensis</i>	Black Rail	LE	1	2009-07-19
<i>Myotis sodalis</i>	Indiana Bat	LE	2	2016-07-04
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	1	2007-06-15
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	1	2012-06-04
<i>Papaipema eryngii</i>	Eryngium Stem Borer	LT	3	2017-07-24
<i>Rallus elegans</i>	King Rail	LE	1	2012-06-06
<i>Sabatia campestris</i>	Prairie Rose Gentian	LE	3	2017-07-14
<i>Silene regia</i>	Royal Catchfly	LE	2	2015-05-14
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	2	2017-05-23
<i>Tympanuchus cupido</i>	Greater Prairie-Chicken	LE	2	2016-05-27
<i>Tyto alba</i>	Barn Owl	LT	7	2016-06-03
<u>Total # of Species</u>		<u>18</u>		

Marshall

<i>Anguilla rostrata</i>	American Eel	LT	2	1977-07-20
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	3	2017-10-04
<i>Canis lupus</i>	Gray/timber Wolf	LT	1	2002-12-29
<i>Carex communis</i>	Fibrous-rooted Sedge	LT	1	2012-04-05
<i>Fundulus diaphanus</i>	Banded Killifish	LT	3	2015-07-29
<i>Moxostoma carinatum</i>	River Redhorse	LT	1	2014
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	2002-07-25
<i>Myotis sodalis</i>	Indiana Bat	LE	4	2011-05-03
<i>Nothocalais cuspidata</i>	Prairie Dandelion	LE	1	1999-05-11
<i>Penstemon tubaeformis</i>	Tube Beard Tongue	LE	1	2008-06-29
<i>Viburnum molle</i>	Arrowwood	LT	2	2014-08-28
<u>Total # of Species</u>		<u>11</u>		

Mason

<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	1	1966-06-15
<i>Agalinis skinneriana</i>	Pale False Foxglove	LT	1	2015-09-11
<i>Anguilla rostrata</i>	American Eel	LT	4	2014-10-13
<i>Apalone mutica</i>	Smooth Softshell	LE	3	2016-05-11
<i>Astragalus distortus</i>	Bent Milk Vetch	LE	4	2017-04-22

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Mason</u>				
<i>Athysanella incongrua</i>	Leafhopper	LE	1	2006-09
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	4	2017-09-22
<i>Cyperus grayoides</i>	Umbrella Sedge	LT	6	2016-08-11
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	2	2004-05-21
<i>Echinodorus tenellus</i>	Small Burhead	LE	1	2010-08-25
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	2	2017-06-29
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	1	2000-06-19
<i>Fundulus dispar</i>	Starhead Topminnow	LT	4	2013-08-06
<i>Gallinula galeata</i>	Common Gallinule	LE	1	1995-07-22
<i>Hesperia metea</i>	Cobweb Skipper	LE	1	1985-07-23
<i>Hesperia ottoe</i>	Ottoe Skipper	LE	3	2007-06-16
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	LT	4	2015-07-28
<i>Hymenopappus scabiosaeus</i>	Old Plainsman	LT	3	2017-06-14
<i>Kinosternon flavescens</i>	Yellow Mud Turtle	LE	4	2015-05-29
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	2004-07-01
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	3	2016-06-09
<i>Lesquerella ludoviciana</i>	Silvery Bladderpod	LE	1	2017-05-12
<i>Mimulus glabratus</i>	Yellow Monkey Flower	LE	1	1977
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	2016-06-22
<i>Nothocalais cuspidata</i>	Prairie Dandelion	LE	1	2017-04-22
<i>Notropis chalybaeus</i>	Ironcolor Shiner	LT	9	2013-08-06
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	2	2008-07-22
<i>Orobanche fasciculata</i>	Clustered Broomrape	LE	1	2000
<i>Orobanche ludoviciana</i>	Broomrape	LT	5	2014-08-15
<i>Pandion haliaetus</i>	Osprey	LE	1	2017
<i>Pinus banksiana</i>	Jack Pine	LE	1	1988-06-13
<i>Pinus resinosa</i>	Red Pine	LE	1	2004-08-16
<i>Platanthera flava</i>	Tubercled Orchid	LT	1	2016-06-07
<i>Pseudacris illinoensis</i>	Illinois Chorus Frog	LT	13	2016-06-03
<i>Rallus elegans</i>	King Rail	LE	1	1994
<i>Schoenoplectus hallii</i>	Hall's Bulrush	LT	8	2015-09-23
<i>Schoenoplectus purshianus</i>	Pursh's Bulrush	LE	1	1995-09-13
<i>Speyeria idalia</i>	Regal Fritillary	LT	3	2017-06-17
<i>Stylisma pickeringii</i>	Patterson's Bindweed	LE	2	2016-08-10
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	5	2016-06-10
<i>Tracaulon arifolium</i>	Halberd-leaved Tearthumb	LE	1	1990-08-03
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	1	1994-06
<u>Total # of Species</u>		<u>42</u>		

<u>Massac</u>				
<i>Amorpha nitens</i>	Smooth False Indigo	LE	1	2004-06-28

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Massac</u>				
<i>Anguilla rostrata</i>	American Eel	LT	1	1998-10-01
<i>Carex gigantea</i>	Large Sedge	LE	1	2010-09-28
<i>Carex reniformis</i>	Sedge	LE	3	2010-06-09
<i>Chamaelirium luteum</i>	Fairy Wand	LE	2	2015-06-24
<i>Cimicifuga rubifolia</i>	Black Cohosh	LE	1	2013-08-27
<i>Cryptobranchus alleganiensis</i>	Hellbender	LE	1	1956-04-15
<i>Cumberlandia monodonta</i>	Spectaclecase	LE	1	1994-08-18
<i>Cyclonaias tuberculata</i>	Purple Wartyback	LT	2	2016-10-17
<i>Cyperus lancastricensis</i>	Galingale	LT	1	2005-10-02
<i>Ellipsaria lineolata</i>	Butterfly	LT	4	2016-10-17
<i>Elliptio crassidens</i>	Elephant-ear	LE	1	2012
<i>Elliptio dilatata</i>	Spike	LT	1	2014-09-22
<i>Eryngium prostratum</i>	Eryngo	LE	1	2002-08-08
<i>Euonymus americanus</i>	American Strawberry Bush	LT	2	2013-08-27
<i>Fusconaia ebena</i>	Ebonysnail	LE	4	2016-10-17
<i>Galactia mohlenbrockii</i>	Boykin's Dioclea	LE	2	2013
<i>Gallinula galeata</i>	Common Gallinule	LE	1	2013-07
<i>Halesia carolina</i>	Silverbell Tree	LE	2	2016-04-15
<i>Helianthus angustifolius</i>	Narrow-leaved Sunflower	LT	4	2015-10-06
<i>Hyla avivoca</i>	Bird-voiced Treefrog	LT	1	2015-10-03
<i>Ictinia mississippiensis</i>	Mississippi Kite	LT	1	1992-06-17
<i>Iresine rhizomatosa</i>	Bloodleaf	LE	1	1997
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	1998-07-19
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1986-06-03
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	2	1987-07-15
<i>Ligumia recta</i>	Black Sandshell	LT	4	2015-09-22
<i>Malus angustifolia</i>	Narrow-leaved Crabapple	LE	1	2010
<i>Melanthera nivea</i>	White Melanthera	LE	1	2005-10-03
<i>Melica mutica</i>	Two-flowered Melic Grass	LE	3	2016-04-15
<i>Melothria pendula</i>	Squirting Cucumber	LT	1	2004-05-26
<i>Myotis austroriparius</i>	Southeastern Myotis	LE	1	2005-06-26
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	2005-07-08
<i>Nemophila triloba</i>	Baby blue-eyes	LE	1	2010-04-16
<i>Nerodia fasciata</i>	Southern Watersnake	LE	1	2004-03-28
<i>Notropis maculatus</i>	Taillight Shiner	LE	1	1988-07-19
<i>Noturus stigmosus</i>	Northern Madtom	LE	1	2009-07
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	1	1998-07-26
<i>Orconectes placidus</i>	Bigclaw Crayfish	LE	2	2001-07-25
<i>Pandion haliaetus</i>	Osprey	LE	5	2016
<i>Phaeophyscia leana</i>	Lea's Bog Lichen	LT	2	2002-02-23
<i>Planera aquatica</i>	Water Elm	LT	2	2005-10-02

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Massac</u>				
<i>Platanthera flava</i>	Tubercled Orchid	LT	1	1976-06-21
<i>Plethobasus cooperianus</i>	Orange-foot Pimpleback	LE	1	2015-10
<i>Plethobasus cyphus</i>	Sheepnose	LE	2	2012
<i>Pleurobema cordatum</i>	Ohio Pigtoe	LE	1	2006-06-28
<i>Potamilus capax</i>	Fat Pocketbook	LE	3	2014-08-26
<i>Pseudemys concinna</i>	River Cooter	LE	2	2013-06-14
<i>Quadrula cylindrica</i>	Rabbitsfoot	LE	1	2012
<i>Quercus phellos</i>	Willow Oak	LT	7	2013-08-31
<i>Rhexia mariana</i>	Dull Meadow Beauty	LE	1	2016-09-04
<i>Scleria pauciflora</i>	Carolina Whipgrass	LE	1	2004-06-30
<i>Sternula antillarum</i>	Least Tern	LE	1	1996-06-11
<i>Styrax americana</i>	Storax	LT	5	2010-09-28
<i>Talinum parviflorum</i>	Small Flower-of-an-hour	LT	1	1952-05-30
<i>Thamnophis sauritus</i>	Eastern Ribbon Snake	LT	2	2012-03-30
<i>Tilia heterophylla</i>	White Basswood	LE	1	2005-10-02
<i>Tyto alba</i>	Barn Owl	LT	1	2010-05-10
<u>Total # of Species</u>		<u>58</u>		

Mcdonough

<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	2015-05-09
<i>Caecidotea lesliei</i>	Isopod	LE	1	2000-05-01
<i>Carex communis</i>	Fibrous-rooted Sedge	LT	1	2013-05-29
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	1	2015-06-24
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	1988-06-25
<i>Melanthium virginicum</i>	Bunchflower	LT	7	2017-06-22
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	3	2002-06-22
<i>Myotis sodalis</i>	Indiana Bat	LE	1	2002-06-21
<i>Pinus banksiana</i>	Jack Pine	LE	1	1968-04-27
<i>Speyeria idalia</i>	Regal Fritillary	LT	3	2003-07-09
<i>Tradescantia bracteata</i>	Prairie Spiderwort	LE	2	1987-05-12
<i>Tropidoclonion lineatum</i>	Lined Snake	LT	1	2001-10-09
<u>Total # of Species</u>		<u>12</u>		

Mchenry

<i>Aflexia rubranura</i>	Redveined Prairie Leafhopper	LT	1	1999
<i>Alasmidonta viridis</i>	Slippershell	LT	14	2017-08-02
<i>Alnus incana ssp. rugosa</i>	Speckled Alder	LE	2	2017-04-21
<i>Amelanchier sanguinea</i>	Shadbush	LE	1	1999
<i>Anguilla rostrata</i>	American Eel	LT	1	1982-08-12
<i>Asclepias lanuginosa</i>	Wooly Milkweed	LE	3	2017-06-06

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Mchenry</u>				
<i>Aster furcatus</i>	Forked Aster	LT	2	1989
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	2	1997-06-11
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	LE	6	2017-08-31
<i>Botaurus lentiginosus</i>	American Bittern	LE	3	2017-06-22
<i>Buteo swainsoni</i>	Swainson's Hawk	LE	5	2007
<i>Calopogon tuberosus</i>	Grass Pink Orchid	LE	5	2017-06-26
<i>Cardamine pratensis</i> var. <i>palustris</i>	Cuckoo Flower	LE	2	2002-08-30
<i>Carex aurea</i>	Golden Sedge	LT	1	1991-06-18
<i>Carex canescens</i> var. <i>disjuncta</i>	Sedge	LE	1	2015-05-22
<i>Carex cryptolepis</i>	Sedge	LT	1	1993-07-05
<i>Carex disperma</i>	Shortleaf Sedge	LE	1	2016-06-06
<i>Carex oligosperma</i>	Few-seeded Sedge	LE	2	2017-06-29
<i>Carex trisperma</i>	Three-seeded Sedge	LE	1	2016-06-06
<i>Carex viridula</i>	Little Green Sedge	LT	5	2017-07-26
<i>Castilleja sessiliflora</i>	Downy Yellow Painted Cup	LE	1	2004-10-08
<i>Chamaedaphne calyculata</i>	Leatherleaf	LT	3	2017-03-18
<i>Chlidonias niger</i>	Black Tern	LE	6	2017-06-15
<i>Cimicifuga racemosa</i>	False Bugbane	LE	3	2016-08-23
<i>Cimicifuga rubifolia</i>	Black Cohosh	LE	1	2017-08-02
<i>Circus cyaneus</i>	Northern Harrier	LE	1	1996-05
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	LT	2	2011-07-16
<i>Corallorhiza maculata</i>	Spotted Coral-root Orchid	LE	2	1995-09-01
<i>Cornus canadensis</i>	Bunchberry	LE	1	1972-05-27
<i>Cypripedium acaule</i>	Moccasin Flower	LE	1	197--EARLY
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	6	2017-05-22
<i>Cypripedium reginae</i>	Showy Lady's Slipper	LE	1	2005-11-29
<i>Drosera rotundifolia</i>	Round-leaved Sundew	LE	2	2013-07-24
<i>Eleocharis pauciflora</i>	Few-flowered Spikerush	LE	1	1984-07
<i>Eleocharis rostellata</i>	Beaked Spike Rush	LT	7	2014-09-22
<i>Elliptio dilatata</i>	Spike	LT	8	2013-07-24
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	42	2017-09-20
<i>Epilobium strictum</i>	Downy Willow Herb	LT	4	2013-09-05
<i>Equisetum pratense</i>	Meadow Horsetail	LT	1	2015-09-01
<i>Eriophorum virginicum</i>	Rusty Cotton Grass	LE	2	2016-07-12
<i>Etheostoma exile</i>	Iowa Darter	LT	27	2017-06-14
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	6	2013-07-27
<i>Fundulus diaphanus</i>	Banded Killifish	LT	3	1995-05
<i>Fundulus dispar</i>	Starhead Topminnow	LT	6	2011-08-10
<i>Gallinula galeata</i>	Common Gallinule	LE	6	2017-07-15
<i>Helianthus giganteus</i>	Tall Sunflower	LE	4	2004-10-08
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	4	1998-06-05

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Mchenry</u>				
<i>Hypericum kalmianum</i>	Kalm's St. John's Wort	LE	1	2017-06-27
<i>Ixobrychus exilis</i>	Least Bittern	LT	9	2016-07-01
<i>Juncus alpinoarticulatus</i>	Richardson's Rush	LT	3	2016-07-26
<i>Larix laricina</i>	Tamarack	LT	2	2017-06-10
<i>Lathyrus ochroleucus</i>	Pale Vetchling	LT	9	2016-06-14
<i>Lechea intermedia</i>	Pinweed	LE	4	2017-07-27
<i>Lespedeza leptostachya</i>	Prairie Bush Clover	LE	2	2017-08-27
<i>Lethenteron appendix</i>	American Brook Lamprey	LT	7	2016-07-21
<i>Ligumia recta</i>	Black Sandshell	LT	3	2017-09-05
<i>Menyanthes trifoliata</i>	Buckbean	LT	3	2013-06-14
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	3	2014-07-21
<i>Nannothemis bella</i>	Elfin Skimmer	LT	1	2017-06-24
<i>Notropis anogenus</i>	Pugnose Shiner	LE	2	2011-08-10
<i>Notropis heterodon</i>	Blackchin Shiner	LT	4	2005-09-01
<i>Notropis heterolepis</i>	Blacknose Shiner	LE	5	2011-08-10
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	4	2003
<i>Pandion haliaetus</i>	Osprey	LE	3	2017-05-11
<i>Penstemon grandiflorus</i>	Large-flowered Beard Tongue	LE	1	1963-06-09
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid	LE	6	2017
<i>Pogonia ophioglossoides</i>	Snake-mouth	LE	4	2017-06-13
<i>Populus balsamifera</i>	Balsam Poplar	LE	2	2014-05-25
<i>Potamogeton gramineus</i>	Grass-leaved Pondweed	LT	3	1991-07-30
<i>Potamogeton praelongus</i>	White-stemmed Pondweed	LE	1	1916-06
<i>Potamogeton robbinsii</i>	Fern Pondweed	LE	1	1991-07-30
<i>Rallus elegans</i>	King Rail	LE	1	2001-07-15
<i>Ranunculus rhomboideus</i>	Prairie Buttercup	LT	5	2017-04-25
<i>Rhynchospora alba</i>	Beaked Rush	LE	3	2017-07-18
<i>Rubus odoratus</i>	Purple-flowering Raspberry	LT	3	2014-05-16
<i>Salix serissima</i>	Autumn Willow	LE	1	2013-06-14
<i>Sarracenia purpurea</i>	Pitcher Plant	LE	3	2017-06-05
<i>Sparganium emersum</i>	Green-fruited Bur-reed	LE	3	2016-07-12
<i>Sterna forsteri</i>	Forster's Tern	LE	1	2005-05-25
<i>Tofieldia glutinosa</i>	False Asphodel	LT	5	2017-07-05
<i>Trichophorum cespitosum</i>	Tufted Bulrush	LE	2	1991
<i>Trientalis borealis</i>	Star-flower	LE	1	2017-05-24
<i>Triglochin maritima</i>	Common Bog Arrow Grass	LT	10	2017-08-16
<i>Triglochin palustris</i>	Slender Bog Arrow Grass	LT	6	2017-07-18
<i>Trillium cernuum</i>	Nodding Trillium	LE	3	2017-06-07
<i>Trillium erectum</i>	Ill-scented Trillium	LE	2	2014-05-16
<i>Utricularia cornuta</i>	Horned Bladderwort	LE	1	2017-07-05
<i>Utricularia intermedia</i>	Flat-leaved Bladderwort	LT	6	2017-07-18

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Mchenry</u>				
<i>Utricularia minor</i>	Small Bladderwort	LE	1	2009-07-07
<i>Vaccinium corymbosum</i>	Highbush Blueberry	LE	1	2017-06-10
<i>Vaccinium macrocarpon</i>	Large Cranberry	LE	1	1977-08-22
<i>Valeriana uliginosa</i>	Marsh Valerian	LE	2	2017-05-31
<i>Villosa iris</i>	Rainbow	LE	1	2002-08
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	8	2017-06-27
<u>Total # of Species</u>		<u>94</u>		

<u>Mclean</u>				
<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	1	2009-05-05
<i>Alasmidonta viridis</i>	Slippershell	LT	11	2016-08-02
<i>Asio flammeus</i>	Short-eared Owl	LE	3	2016-03-06
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	4	2014-06-27
<i>Circus cyaneus</i>	Northern Harrier	LE	1	2015-06-09
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	3	2017-05-22
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	2009-07-31
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	4	2008-07-23
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	1985-06-13
<i>Necturus maculosus</i>	Mudpuppy	LT	1	2016-11-10
<i>Pinus resinosa</i>	Red Pine	LE	1	2006-06-07
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	4	2013-05-02
<u>Total # of Species</u>		<u>12</u>		

<u>Menard</u>				
<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	1	1996-03
<i>Agalinis skinneriana</i>	Pale False Foxglove	LT	1	2001-08
<i>Apalone mutica</i>	Smooth Softshell	LE	2	2011-07-14
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	1	1996-10-28
<i>Cyperus grayoides</i>	Umbrella Sedge	LT	1	2003-08-26
<i>Hesperia ottoe</i>	Ottoe Skipper	LE	1	1991-07
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	1992
<i>Orobanche ludoviciana</i>	Broomrape	LT	1	1992-PRE
<i>Pseudacris illinoensis</i>	Illinois Chorus Frog	LT	1	2013-03-30
<i>Speyeria idalia</i>	Regal Fritillary	LT	2	2004-06-11
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	2	2013-06-17
<i>Tradescantia bracteata</i>	Prairie Spiderwort	LE	1	2001-05
<i>Tyto alba</i>	Barn Owl	LT	1	1990-08
<u>Total # of Species</u>		<u>13</u>		

Mercer

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Mercer</u>				
<i>Ammocrypta clarum</i>	Western Sand Darter	LE	1	1963-08-06
<i>Ammocrypta pellucidum</i>	Eastern Sand Darter	LT	1	2015-06-30
<i>Anguilla rostrata</i>	American Eel	LT	1	1982-09-03
<i>Cumberlandia monodonta</i>	Spectaclecase	LE	1	1988
<i>Ellipsaria lineolata</i>	Butterfly	LT	3	2006-09-01
<i>Fusconaia ebena</i>	Ebonysnail	LE	1	1979-09-19
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	1	1967-07-23
<i>Lampsilis higginsii</i>	Higgins Eye	LE	2	1988
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1994-06-28
<i>Ligumia recta</i>	Black Sandshell	LT	3	2006-09-01
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	2016-06-11
<i>Myotis sodalis</i>	Indiana Bat	LE	2	2016-06-11
<i>Notropis boops</i>	Bigeye Shiner	LE	1	1976-08-11
<i>Plethobasus cyphus</i>	Sheepnose	LE	1	1979-09-01
<u>Total # of Species</u>		<u>14</u>		

<u>Monroe</u>				
<i>Anguilla rostrata</i>	American Eel	LT	3	2016-07-28
<i>Botaurus lentiginosus</i>	American Bittern	LE	1	2008-10-26
<i>Buchnera americana</i>	Blue Hearts	LT	1	2014-07-17
<i>Bumelia lanuginosa</i>	Woolly Buckthorn	LE	3	2013-09-18
<i>Carex nigromarginata</i>	Black-edged Sedge	LE	1	2011-05-13
<i>Centruroides vittatus</i>	Common Striped Scorpion	LE	1	2016-11-14
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	LT	1	2009-08-02
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	3	2016-08-07
<i>Crystallaria asprella</i>	Crystal Darter	LT	1	2013-07-11
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	1	1975-05-02
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	1	2012-05-11
<i>Draba cuneifolia</i>	Whitlow Grass	LE	3	2016-04-01
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	1	1963-07-30
<i>Euphorbia spathulata</i>	Spurge	LE	1	2013-05-08
<i>Fontigens antroecetes</i>	Hydrobiid cave snail	LE	1	2016-12-11
<i>Galium virgatum</i>	Dwarf Bedstraw	LE	3	2015-08
<i>Gallinula galeata</i>	Common Gallinule	LE	3	2011-05-22
<i>Gammarus acherondytes</i>	Illinois Cave Amphipod	LE	9	2014-08-10
<i>Gastrophryne carolinensis</i>	Eastern Narrowmouth Toad	LT	10	2016-08-17
<i>Heliotropium tenellum</i>	Slender Heliotrope	LE	3	2016-09-10
<i>Hexalectris spicata</i>	Crested Coralroot Orchid	LE	3	2016-07-24
<i>Ictinia mississippiensis</i>	Mississippi Kite	LT	2	1998-04-09
<i>Ixobrychus exilis</i>	Least Bittern	LT	2	2011-05-07
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	4	1989-08-17

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Monroe</u>				
<i>Masticophis flagellum</i>	Coachwhip	LE	2	2006-05-26
<i>Matelea decipiens</i>	Climbing Milkweed	LE	2	2015-08
<i>Mentzelia oligosperma</i>	Stickleaf	LE	3	2013
<i>Myotis grisescens</i>	Gray Bat	LE	1	2001-07-05
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	3	2016-02-09
<i>Myotis sodalis</i>	Indiana Bat	LE	4	2011-07-19
<i>Notropis boops</i>	Bigeye Shiner	LE	1	2013-07-29
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	1	2009-08-07
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	1	2009-08-27
<i>Pantherophis emoryi</i>	Great Plains Ratsnake	LE	2	2011-05-13
<i>Pinus echinata</i>	Shortleaf Pine	LE	1	2012-06-20
<i>Pseudacris illinoensis</i>	Illinois Chorus Frog	LT	3	1999-04-08
<i>Pygmarrhopalites madonnensis</i>	Madonna Cave Springtail	LE	1	1998-12-11
<i>Rudbeckia missouriensis</i>	Missouri Orange Coneflower	LT	5	2016-09-10
<i>Talinum calycinum</i>	Fameflower	LE	1	2017
<i>Tantilla gracilis</i>	Flathead Snake	LT	4	2016-10-28
<u>Total # of Species</u>		<u>40</u>		

Montgomery

<i>Calephelis muticum</i>	Swamp Metalmark	LE	1	2003-08-09
<i>Circus cyaneus</i>	Northern Harrier	LE	1	2015-02-15
<i>Melanthium virginicum</i>	Bunchflower	LT	1	2017-06-14
<i>Silene regia</i>	Royal Catchfly	LE	1	2002-07-18
<i>Sisyrinchium atlanticum</i>	Eastern Blue-eyed Grass	LE	2	2002-06-12
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	2013-06-03
<i>Trifolium reflexum</i>	Buffalo Clover	LT	1	2017-06-14
<i>Tyto alba</i>	Barn Owl	LT	4	2016
<u>Total # of Species</u>		<u>8</u>		

Morgan

<i>Agalinis skinneriana</i>	Pale False Foxglove	LT	3	2003-09-15
<i>Asio flammeus</i>	Short-eared Owl	LE	1	2013-02
<i>Astragalus distortus</i>	Bent Milk Vetch	LE	1	2012-04-10
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	1989-06-17
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	1	2013-10-21
<i>Buchnera americana</i>	Blue Hearts	LT	1	2017-07-08
<i>Fundulus dispar</i>	Starhead Topminnow	LT	1	1927-06-20
<i>Fusconaia ebena</i>	Ebonyshell	LE	1	2002-08-14
<i>Hesperia ottoe</i>	Ottoe Skipper	LE	2	1998-06-25
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	LT	1	2015-05-26

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Morgan</u>				
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	3	1997-06
<i>Melanthium virginicum</i>	Bunchflower	LT	1	1993-04-27
<i>Myotis sodalis</i>	Indiana Bat	LE	1	2015-05-28
<i>Polygala incarnata</i>	Pink Milkwort	LE	1	1994
<i>Pseudacris illinoensis</i>	Illinois Chorus Frog	LT	3	2014-04-06
<i>Schoenoplectus hallii</i>	Hall's Bulrush	LT	1	1993-10-12
<i>Speyeria idalia</i>	Regal Fritillary	LT	2	2012-07-03
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	2016-06-16
<i>Tropidoclonion lineatum</i>	Lined Snake	LT	1	1983-08-29
<u>Total # of Species</u>		<u>19</u>		

Moultrie

<i>Elliptio dilatata</i>	Spike	LT	1	2017-08-24
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	3	2001-06-19
<i>Notropis boops</i>	Bigeye Shiner	LE	3	1967-07-01
<i>Pandion haliaetus</i>	Osprey	LE	1	2017
<u>Total # of Species</u>		<u>4</u>		

Ogle

<i>Amelanchier sanguinea</i>	Shadbush	LE	1	1994-05
<i>Anguilla rostrata</i>	American Eel	LT	1	1991-07-31
<i>Arctostaphylos uva-ursi</i>	Bearberry	LE	1	1986
<i>Asclepias lanuginosa</i>	Woolly Milkweed	LE	1	2017-06-13
<i>Aster furcatus</i>	Forked Aster	LT	3	2012-08-07
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	2006-07-11
<i>Besseyia bullii</i>	Kittentails	LT	9	2016-06-11
<i>Betula alleghaniensis</i>	Yellow Birch	LE	2	2006-10-05
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	LE	2	2013-07-23
<i>Carex cryptolepis</i>	Sedge	LT	1	2010-07-21
<i>Carex echinata</i>	Sedge	LE	1	1994-05
<i>Castilleja sessiliflora</i>	Downy Yellow Painted Cup	LE	3	2016-07-17
<i>Ceanothus herbaceus</i>	Redroot	LE	1	1996-06-21
<i>Cornus canadensis</i>	Bunchberry	LE	3	2001-06-14
<i>Corydalis sempervirens</i>	Pink Corydalis	LE	1	1993-04-29
<i>Cyclonaias tuberculata</i>	Purple Wartyback	LT	2	2009-07-21
<i>Cypripedium acaule</i>	Moccasin Flower	LE	1	1999-05-19
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	1	2017-06-15
<i>Dichanthelium boreale</i>	Northern Panic Grass	LE	1	1994-05
<i>Elliptio dilatata</i>	Spike	LT	1	2012
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	3	2016-09-22

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Ogle</u>				
<i>Equisetum pratense</i>	Meadow Horsetail	LT	3	2007-07-08
<i>Equisetum sylvaticum</i>	Woodland Horsetail	LE	2	2013-09-04
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	5	2003-08-08
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	1	2017-08-02
<i>Gymnocarpium dryopteris</i>	Oak Fern	LE	1	2013-07-14
<i>Helianthus giganteus</i>	Tall Sunflower	LE	1	2010-10-05
<i>Hemidactylium scutatum</i>	Four-toed Salamander	LT	1	2003-05-03
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	LT	3	1997-05-18
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	1	2013-07-24
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1990-06-16
<i>Lathyrus ochroleucus</i>	Pale Vetchling	LT	1	1992-05-13
<i>Lespedeza leptostachya</i>	Prairie Bush Clover	LE	2	2017-06-13
<i>Ligumia recta</i>	Black Sandshell	LT	7	2012-08-15
<i>Luzula acuminata</i>	Hairy Woodrush	LE	2	2010-06-28
<i>Lycopodiella inundata</i>	Bog Clubmoss	LE	1	1962-09-01
<i>Lycopodium clavatum</i>	Running Pine	LE	1	2006-10-05
<i>Lycopodium dendroideum</i>	Ground Pine	LE	1	1995-06-13
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	1998-07-15
<i>Myotis sodalis</i>	Indiana Bat	LE	1	2011-04-21
<i>Nocomis micropogon</i>	River Chub	LE	1	1973-06-19
<i>Nothocalais cuspidata</i>	Prairie Dandelion	LE	5	2016-06-09
<i>Notropis heterolepis</i>	Blacknose Shiner	LE	1	1998-07-28
<i>Penstemon grandiflorus</i>	Large-flowered Beard Tongue	LE	1	2016-05-10
<i>Phegopteris connectilis</i>	Long Beech Fern	LE	1	2014-05-22
<i>Sorbus americana</i>	American Mountain Ash	LE	1	2001-06-14
<i>Speyeria idalia</i>	Regal Fritillary	LT	1	2016-07-16
<i>Sullivantia sullivantii</i>	Sullivantia	LT	2	2008-06-19
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	5	2017-08-24
<i>Trientalis borealis</i>	Star-flower	LE	2	2015-05-14
<i>Woodsia ilvensis</i>	Rusty Woodsia	LE	2	2010-06-28
<u>Total # of Species</u>		<u>51</u>		

<u>Peoria</u>				
<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	2	2016-06-22
<i>Agalinis skinneriana</i>	Pale False Foxglove	LT	1	2011-07-13
<i>Anguilla rostrata</i>	American Eel	LT	6	2014-08-24
<i>Apalone mutica</i>	Smooth Softshell	LE	2	2007-09-18
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	5	2017-10-04
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	LE	6	2016-07-19
<i>Corallorhiza maculata</i>	Spotted Coral-root Orchid	LE	1	2007-06
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	1	2012-04-28

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Peoria</u>				
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	1	2011-08-05
<i>Fundulus diaphanus</i>	Banded Killifish	LT	1	2015-07-29
<i>Fundulus dispar</i>	Starhead Topminnow	LT	1	1989-07-05
<i>Fusconaia ebena</i>	Ebonysell	LE	1	2012-08-04
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	2004-06-19
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	2006-07-27
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	1	2010-10-28
<i>Lepomis symmetricus</i>	Bantam Sunfish	LT	1	1998-10-14
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	2016-06-07
<i>Myotis sodalis</i>	Indiana Bat	LE	1	2017-08-09
<i>Pandion haliaetus</i>	Osprey	LE	2	2017
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	1	2009-06-06
<i>Rallus elegans</i>	King Rail	LE	1	1988-05-26
<i>Speyeria idalia</i>	Regal Fritillary	LT	1	1961-07-14
<i>Viburnum molle</i>	Arrowwood	LT	2	2017-07-01
<u>Total # of Species</u> <u>23</u>				

Perry

<i>Asio flammeus</i>	Short-eared Owl	LE	1	2009-04-08
<i>Botaurus lentiginosus</i>	American Bittern	LE	1	2003-06-15
<i>Circus cyaneus</i>	Northern Harrier	LE	1	2013-WI
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	1	1983-07-28
<i>Gallinula galeata</i>	Common Gallinule	LE	1	1993-06-28
<i>Ixobrychus exilis</i>	Least Bittern	LT	2	2011-06-14
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	2015-06-03
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	1988-08-29
<i>Myotis sodalis</i>	Indiana Bat	LE	1	1988-08-29
<i>Platanthera flava</i>	Tubercled Orchid	LT	1	2002-06-25
<i>Rallus elegans</i>	King Rail	LE	1	1999-07-24
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	2016-09
<i>Tyto alba</i>	Barn Owl	LT	19	2017-06-25
<u>Total # of Species</u> <u>13</u>				

Piatt

<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	3	2017-04-13
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	LT	1	2011-SU
<i>Fundulus dispar</i>	Starhead Topminnow	LT	1	2015-09-26
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	2000-05-25
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	1	2015-09-26
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	1988-07-06

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
Piatt				
<i>Necturus maculosus</i>	Mudpuppy	LT	2	2017-03-06
<i>Notropis chalybaeus</i>	Ironcolor Shiner	LT	1	2015-09-26
<i>Phlox pilosa ssp. sangamonensis</i>	Sangamon Phlox	LE	3	2011-06-01
<i>Sistrurus catenatus</i>	Massasauga	LE	1	2008
Total # of Species 10				

Pike				
<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	1	2006-11
<i>Agalinis skinneriana</i>	Pale False Foxglove	LT	3	2011-08-03
<i>Ammocrypta clarum</i>	Western Sand Darter	LE	3	1963-06-26
<i>Anguilla rostrata</i>	American Eel	LT	3	2014-08-19
<i>Apalone mutica</i>	Smooth Softshell	LE	1	2007-07-12
<i>Asclepias stenophylla</i>	Narrow-leaved Green Milkweed	LE	6	2017-08-16
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	1	2017-09-28
<i>Buchnera americana</i>	Blue Hearts	LT	2	2012-08-02
<i>Canis lupus</i>	Gray/timber Wolf	LT	1	2005-12-09
<i>Circus cyaneus</i>	Northern Harrier	LE	1	1997-05-01
<i>Clematis viorna</i>	Leatherflower	LE	1	1981-07
<i>Corallorhiza maculata</i>	Spotted Coral-root Orchid	LE	1	2009-05-15
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	1	1994-07
<i>Cumberlandia monodonta</i>	Spectaclecase	LE	3	2003-10-08
<i>Delphinium carolinianum</i>	Wild Blue Larkspur	LT	5	2016-09-22
<i>Ellipsaria lineolata</i>	Butterfly	LT	5	2016-11-09
<i>Elliptio crassidens</i>	Elephant-ear	LE	1	1987-07-09
<i>Fundulus diaphanus</i>	Banded Killifish	LT	2	2015-07-15
<i>Fundulus dispar</i>	Starhead Topminnow	LT	1	1927-06-20
<i>Fusconaia ebena</i>	Ebonyshell	LE	2	2002-08-14
<i>Hesperia metea</i>	Cobweb Skipper	LE	1	2000-04-13
<i>Ictinia mississippiensis</i>	Mississippi Kite	LT	1	2000-05-17
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	6	1999-06-23
<i>Ligumia recta</i>	Black Sandshell	LT	5	2015-10-23
<i>Mentzelia oligosperma</i>	Stickleaf	LE	6	2017-08-16
<i>Moxostoma carinatum</i>	River Redhorse	LT	1	2006-08-22
<i>Myotis grisescens</i>	Gray Bat	LE	2	1998-08-24
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	7	2014-06-30
<i>Myotis sodalis</i>	Indiana Bat	LE	10	2016-08-10
<i>Notropis boops</i>	Bigeye Shiner	LE	2	2015-07-15
<i>Plantago cordata</i>	Heart-leaved Plantain	LE	2	2007-08-08
<i>Poa wolfii</i>	Wolf's Bluegrass	LE	1	2001-05-30
<i>Potamilus capax</i>	Fat Pocketbook	LE	2	1978-08-31
<i>Speyeria idalia</i>	Regal Fritillary	LT	1	1999-06-14

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Pike</u>				
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	2	2013-05-16
<i>Tradescantia bracteata</i>	Prairie Spiderwort	LE	1	1990-05-07
<i>Trifolium reflexum</i>	Buffalo Clover	LT	1	1993-05-27
<i>Tyto alba</i>	Barn Owl	LT	2	2003-06-24
<i>Viburnum molle</i>	Arrowwood	LT	2	2010-08-30
<u>Total # of Species 39</u>				

<u>Pope</u>				
<i>Amorpha nitens</i>	Smooth False Indigo	LE	2	2015-10-04
<i>Anguilla rostrata</i>	American Eel	LT	1	1986-08-11
<i>Apalone mutica</i>	Smooth Softshell	LE	1	2016-08-17
<i>Asplenium bradleyi</i>	Bradley's Spleenwort	LE	2	2011-09-29
<i>Bartonia paniculata</i>	Screwstem	LE	2	2016-09-04
<i>Berchemia scandens</i>	Supple-jack	LE	1	2013-SUM
<i>Botrychium biternatum</i>	Southern Grape Fern	LE	3	1994-12-03
<i>Buchnera americana</i>	Blue Hearts	LT	1	2016-08-03
<i>Calamagrostis insperata</i>	Hollow Reed Grass	LE	3	2015-05-29
<i>Caprimulgus carolinensis</i>	Chuck-will's-widow	LT	1	2013-05-25
<i>Carex alata</i>	Winged Sedge	LE	2	2010-06-07
<i>Carex atlantica</i>	Sedge	LT	2	2015-06-03
<i>Carex bromoides</i>	Sedge	LT	3	2017-04-23
<i>Carex communis</i>	Fibrous-rooted Sedge	LT	1	1984-06-15
<i>Carex decomposita</i>	Cypress-knee Sedge	LE	1	2003
<i>Carex intumescens</i>	Swollen Sedge	LE	3	2013-07-23
<i>Carex nigromarginata</i>	Black-edged Sedge	LE	1	2011-05-27
<i>Carex oxylepis</i>	Sharp-scaled Sedge	LT	1	2010-06-24
<i>Carex physorhyncha</i>	Bellows Beak Sedge	LE	1	2000-05-17
<i>Carex prasina</i>	Drooping Sedge	LT	1	2015-06-02
<i>Carex willdenowii</i>	Willdenow's Sedge	LT	7	2017-05-11
<i>Chamaelirium luteum</i>	Fairy Wand	LE	3	2015-06-24
<i>Chimaphila maculata</i>	Spotted Wintergreen	LE	3	2013-08-26
<i>Cimicifuga rubifolia</i>	Black Cohosh	LE	9	2015-10-09
<i>Circus cyaneus</i>	Northern Harrier	LE	1	1995-02-28
<i>Corydalis halei</i>	Hale's Corydalis	LE	1	2013-04-25
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	LE	1	2004-06-24
<i>Crangonyx anomalus</i>	Anomalous Spring Amphipod	LE	2	1992-04-15
<i>Crangonyx packardii</i>	Packard's Cave Amphipod	LE	1	1976-06-05
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	1	2016-04-06
<i>Cyperus lancastricensis</i>	Galingale	LT	1	1996-07-23
<i>Dennstaedtia punctilobula</i>	Hay-scented Fern	LE	7	2013-08-24
<i>Dichanthelium yadkinense</i>	Panic Grass	LE	8	2015-06-11

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Pope</u>				
<i>Dodecatheon frenchii</i>	French's Shootingstar	LT	4	2015-04-17
<i>Eryngium prostratum</i>	Eryngo	LE	1	1996-10-01
<i>Euonymus americanus</i>	American Strawberry Bush	LT	1	1994-08-11
<i>Eupatorium hyssopifolium</i>	Hyssopleaf Thoroughwort	LE	1	2015-10-06
<i>Fusconaia ebena</i>	Ebonysnail	LE	2	1994
<i>Gastrophryne carolinensis</i>	Eastern Narrowmouth Toad	LT	2	1992-08-11
<i>Helianthus angustifolius</i>	Narrow-leaved Sunflower	LT	2	2015-10-06
<i>Hesperia metea</i>	Cobweb Skipper	LE	1	1989-05-16
<i>Heteranthera reniformis</i>	Mud Plantain	LE	1	1990-07-25
<i>Huperzia porophila</i>	Cliff Clubmoss	LT	5	2013-04-21
<i>Hyla avivoca</i>	Bird-voiced Treefrog	LT	2	2008-06-28
<i>Isotria verticillata</i>	Whorled Pogonia	LE	1	2016-05-05
<i>Lampetra aepyptera</i>	Least Brook Lamprey	LT	10	2014-04-19
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1989-04-19
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	1	1994-10-18
<i>Ligumia recta</i>	Black Sandshell	LT	1	2014-09-26
<i>Lonicera flava</i>	Yellow Honeysuckle	LE	2	1992-08-31
<i>Malus angustifolia</i>	Narrow-leaved Crabapple	LE	2	2010
<i>Melothria pendula</i>	Squirting Cucumber	LT	4	2013-08-23
<i>Myotis austroriparius</i>	Southeastern Myotis	LE	6	2015-02-06
<i>Myotis grisescens</i>	Gray Bat	LE	2	2015-06-01
<i>Myotis leibii</i>	Eastern Small-footed Myotis	LT	4	2015-07-03
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	8	2014-02-06
<i>Myotis sodalis</i>	Indiana Bat	LE	5	2016-02-15
<i>Neotoma floridana</i>	Eastern Wood Rat	LE	2	2014-08-01
<i>Notropis anogenus</i>	Pugnose Shiner	LE	1	1990-10-15
<i>Orconectes indianensis</i>	Indiana Crayfish	LE	3	2006-09-13
<i>Orconectes placidus</i>	Bigclaw Crayfish	LE	1	1999-10-31
<i>Oxalis illinoensis</i>	Illinois Wood Sorrel	LT	3	2015-06-01
<i>Pandion haliaetus</i>	Osprey	LE	1	2014-05-12
<i>Phaeophyscia leana</i>	Lea's Bog Lichen	LT	2	1997-01-14
<i>Pinus echinata</i>	Shortleaf Pine	LE	2	2011-09-24
<i>Planera aquatica</i>	Water Elm	LT	1	1988-09-13
<i>Plantago cordata</i>	Heart-leaved Plantain	LE	2	2007-07-01
<i>Platanthera clavellata</i>	Wood Orchid	LE	2	2016-09-04
<i>Platanthera flava</i>	Tuberclad Orchid	LT	1	2015-06-24
<i>Poa alsodes</i>	Grove Bluegrass	LE	1	1986-09-25
<i>Polygala incarnata</i>	Pink Milkwort	LE	2	1996-10-11
<i>Potamilus capax</i>	Fat Pocketbook	LE	1	2009-08-19
<i>Rhexia mariana</i>	Dull Meadow Beauty	LE	2	2016-09-04
<i>Rhynchospora glomerata</i>	Clustered Beaked Rush	LE	2	2014-09-10

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Pope</u>				
<i>Sagittaria australis</i>	Arrowhead	LE	1	2015-10-02
<i>Salvia azurea</i>	Blue Sage	LT	3	2002-10-03
<i>Scirpus polyphyllus</i>	Bulrush	LT	2	2009-08-03
<i>Scleria pauciflora</i>	Carolina Whipgrass	LE	5	2017-07-26
<i>Sedum telephioides</i>	American Orpine	LT	4	2015
<i>Spiranthes vernalis</i>	Spring Ladies' Tresses	LE	4	2016-07-27
<i>Stellaria pubera</i>	Great Chickweed	LE	2	1999-06-14
<i>Stenanthium gramineum</i>	Grass-leaved Lily	LT	5	2016-04-08
<i>Styrax americana</i>	Storax	LT	2	2003
<i>Talinum parviflorum</i>	Small Flower-of-an-hour	LT	4	2016-09-16
<i>Thamnophis sauritus</i>	Eastern Ribbon Snake	LT	1	1989-06-17
<i>Thelypteris noveboracensis</i>	New York Fern	LE	1	2007-05-31
<i>Thryomanes bewickii</i>	Bewick's Wren	LE	2	1990-07-13
<i>Toxolasma lividus</i>	Purple Lilliput	LE	2	2010-06-15
<i>Trichomanes boschianum</i>	Filmy Fern	LE	5	2011-09-29
<i>Tyto alba</i>	Barn Owl	LT	17	2016-06-02
<i>Vaccinium stamineum</i>	Deerberry	LE	1	1962-05-19
<i>Villosa lienosa</i>	Little Spectaclecase	LT	1	2010-06-15
<u>Total # of Species</u> <u>92</u>				

<u>Pulaski</u>				
<i>Asio flammeus</i>	Short-eared Owl	LE	1	2014-01-28
<i>Botrychium biternatum</i>	Southern Grape Fern	LE	1	1989-03-25
<i>Carex decomposita</i>	Cypress-knee Sedge	LE	1	2007-05-25
<i>Carex gigantea</i>	Large Sedge	LE	1	2002-08-14
<i>Carex intumescens</i>	Swollen Sedge	LE	2	2013-09-17
<i>Carex oxylepis</i>	Sharp-scaled Sedge	LT	1	1992-07-01
<i>Carya aquatica</i>	Water Hickory	LT	1	2007-06-15
<i>Clematis crispa</i>	Blue Jasmine	LE	1	1997-09-04
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	LE	3	2016-08-02
<i>Cyclonaias tuberculata</i>	Purple Wartyback	LT	3	2016-10-19
<i>Cyperus lancastrimensis</i>	Galingale	LT	1	2005-10-04
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	1	1989-04-27
<i>Desmognathus conanti</i>	Spotted Dusky Salamander	LE	14	2017-05-30
<i>Ellipsaria lineolata</i>	Butterfly	LT	2	2016-10-19
<i>Elliptio crassidens</i>	Elephant-ear	LE	2	2016-10-19
<i>Elliptio dilatata</i>	Spike	LT	1	2015-09-15
<i>Euonymus americanus</i>	American Strawberry Bush	LT	2	2005-10-16
<i>Fusconaia ebena</i>	Ebonyshell	LE	5	2016-10-19
<i>Halesia carolina</i>	Silverbell Tree	LE	1	2010-06-28
<i>Helianthus angustifolius</i>	Narrow-leaved Sunflower	LT	1	1989-09-18

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Pulaski</u>				
<i>Heteranthera reniformis</i>	Mud Plantain	LE	1	1999-09-15
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	1	1963-07-15
<i>Hybognathus hayi</i>	Cypress Minnow	LE	1	1997-11-09
<i>Hybopsis amnis</i>	Pallid Shiner	LE	1	1940-10-05
<i>Hyla avivoca</i>	Bird-voiced Treefrog	LT	2	2012
<i>Ictinia mississippiensis</i>	Mississippi Kite	LT	2	2010-07-27
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	2002
<i>Justicia ovata</i>	Water Willow	LE	1	2002-08-09
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1988
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	2	1979-10-27
<i>Lepomis symmetricus</i>	Bantam Sunfish	LT	1	2004-05-12
<i>Ligumia recta</i>	Black Sandshell	LT	3	2016-10-19
<i>Limnothlypis swainsonii</i>	Swainson's Warbler	LE	2	1993-06-24
<i>Lysimachia radicans</i>	Creeping Loosestrife	LE	2	2005-10-16
<i>Melanthera nivea</i>	White Melanthera	LE	1	2004
<i>Melothria pendula</i>	Squirting Cucumber	LT	2	2007-05-24
<i>Myotis austroriparius</i>	Southeastern Myotis	LE	3	2016-07-25
<i>Myotis grisescens</i>	Gray Bat	LE	1	1991-07-15
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	2013-06-13
<i>Myotis sodalis</i>	Indiana Bat	LE	3	2016-08-05
<i>Necturus maculosus</i>	Mudpuppy	LT	1	2001-04-01
<i>Notropis anogenus</i>	Pugnose Shiner	LE	1	1940
<i>Noturus stigmosus</i>	Northern Madtom	LE	1	2009-07
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	2	2010-06-24
<i>Planera aquatica</i>	Water Elm	LT	3	2017-08-17
<i>Plethobasus cooperianus</i>	Orange-foot Pimpleback	LE	1	2015-09-16
<i>Plethobasus cyphyus</i>	Sheepnose	LE	1	2015-09-14
<i>Pleurobema cordatum</i>	Ohio Pigtoe	LE	3	2017-10-19
<i>Potamilus capax</i>	Fat Pocketbook	LE	1	2012-08-15
<i>Quadrula cylindrica</i>	Rabbitsfoot	LE	1	2005-08-04
<i>Quercus phellos</i>	Willow Oak	LT	2	2005-10-16
<i>Quercus texana</i>	Nuttall's Oak	LE	2	2005-10-16
<i>Stenanthium gramineum</i>	Grass-leaved Lily	LT	1	2015-06-29
<i>Sternula antillarum</i>	Least Tern	LE	1	2002-08-11
<i>Styrax americana</i>	Storax	LT	3	2010-06-16
<i>Thamnophis sauritus</i>	Eastern Ribbon Snake	LT	2	2010-09-07
<i>Tilia heterophylla</i>	White Basswood	LE	1	2001-07-17
<i>Tyto alba</i>	Barn Owl	LT	5	2013-07-12
<i>Villosa lienosa</i>	Little Spectaclecase	LT	1	2015
<u>Total # of Species</u>		<u>59</u>		

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Putnam</u>				
<i>Anguilla rostrata</i>	American Eel	LT	3	2016-08-03
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	4	2016-08-11
<i>Chlidonias niger</i>	Black Tern	LE	1	2003-07-12
<i>Coregonus artedi</i>	Cisco	LT	1	1935-10
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	2	2014-07-17
<i>Fundulus diaphanus</i>	Banded Killifish	LT	1	2015-04-14
<i>Fundulus dispar</i>	Starhead Topminnow	LT	1	2015-08-27
<i>Gallinula galeata</i>	Common Gallinule	LE	1	2017-06-09
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	LT	1	1977
<i>Ichthyomyzon fossor</i>	Northern Brook Lamprey	LE	1	2015-04-14
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	2017-06-09
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1993-SUM
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	1	2015-06-13
<i>Mimulus glabratus</i>	Yellow Monkey Flower	LE	1	2012-03
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	2002-05-29
<i>Myotis sodalis</i>	Indiana Bat	LE	4	2011-05-03
<i>Phalaropus tricolor</i>	Wilson's Phalarope	LE	1	2005
<i>Rallus elegans</i>	King Rail	LE	1	2005
<i>Sparganium americanum</i>	American Bur-reed	LE	1	1977-08-25
<i>Trifolium reflexum</i>	Buffalo Clover	LT	1	2017-06-15
<i>Tyto alba</i>	Barn Owl	LT	1	2013-07-28
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	1	2015-06-14

Total # of Species 22

Randolph

<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	1	2015-05-14
<i>Ammocrypta clarum</i>	Western Sand Darter	LE	1	1989-08-13
<i>Anguilla rostrata</i>	American Eel	LT	7	2015-10-08
<i>Asio flammeus</i>	Short-eared Owl	LE	1	2015-02-20
<i>Asplenium bradleyi</i>	Bradley's Spleenwort	LE	2	2011-10-17
<i>Carex physorhyncha</i>	Bellows Beak Sedge	LE	1	1998-06-17
<i>Centruroides vittatus</i>	Common Striped Scorpion	LE	2	2013-10-11
<i>Circus cyaneus</i>	Northern Harrier	LE	2	2014-WI
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	4	2016-09-05
<i>Draba cuneifolia</i>	Whitlow Grass	LE	1	2008-04-16
<i>Gallinula galeata</i>	Common Gallinule	LE	1	1986-05-09
<i>Gastrophryne carolinensis</i>	Eastern Narrowmouth Toad	LT	4	2016-07-06
<i>Hexalectris spicata</i>	Crested Coralroot Orchid	LE	1	2012-07-10
<i>Ictinia mississippiensis</i>	Mississippi Kite	LT	3	1998-06-17
<i>Isotria medeoloides</i>	Small Whorled Pogonia	LE	1	1991-05-21
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1983-06-30

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Randolph</u>				
<i>Lonicera flava</i>	Yellow Honeysuckle	LE	1	2006-05-18
<i>Masticophis flagellum</i>	Coachwhip	LE	1	1978
<i>Mentzelia oligosperma</i>	Stickleaf	LE	1	2008
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	2002-07-30
<i>Myotis sodalis</i>	Indiana Bat	LE	2	2014-07-14
<i>Notropis boops</i>	Bigeye Shiner	LE	1	1964-06-11
<i>Pantherophis emoryi</i>	Great Plains Ratsnake	LE	1	2008-11-01
<i>Pinus echinata</i>	Shortleaf Pine	LE	1	2013-04-25
<i>Ptilimnium nuttallii</i>	Mock Bishop's Weed	LE	1	1987-07-15
<i>Rudbeckia missouriensis</i>	Missouri Orange Coneflower	LT	1	2011-07-06
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE	2	2015-05-14
<i>Scleria pauciflora</i>	Carolina Whipgrass	LE	1	2010-07-13
<i>Sternula antillarum</i>	Least Tern	LE	1	2006-06-30
<i>Talinum calycinum</i>	Fameflower	LE	1	2009-07-05
<i>Tantilla gracilis</i>	Flathead Snake	LT	1	1958-04-19
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	2	2013-04-30
<i>Tyto alba</i>	Barn Owl	LT	10	2016-06-02
<u>Total # of Species</u>		<u>33</u>		

Richland

<i>Ammocrypta pellucidum</i>	Eastern Sand Darter	LT	1	2007-06-27
<i>Asio flammeus</i>	Short-eared Owl	LE	1	2014-06-30
<i>Elliptio dilatata</i>	Spike	LT	1	1979-10-03
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	4	2015-07-11
<i>Rallus elegans</i>	King Rail	LE	1	2014-06-15
<i>Stenanthium gramineum</i>	Grass-leaved Lily	LT	1	2016-05-09
<u>Total # of Species</u>		<u>6</u>		

Rock Island

<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	3	2016-05-17
<i>Ammocrypta clarum</i>	Western Sand Darter	LE	3	2017-06-15
<i>Anguilla rostrata</i>	American Eel	LT	4	2016-08-15
<i>Castilleja sessiliflora</i>	Downy Yellow Painted Cup	LE	1	2017-06-04
<i>Catostomus catostomus</i>	Longnose Sucker	LT	1	1994-02-25
<i>Corallorhiza maculata</i>	Spotted Coral-root Orchid	LE	1	2002-08-29
<i>Crystallaria asprella</i>	Crystal Darter	LT	3	2016-08-11
<i>Cumberlandia monodonta</i>	Spectaclecase	LE	5	2016-10-25
<i>Cyclonaias tuberculata</i>	Purple Wartyback	LT	2	2016-09
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	1	2004-06-19
<i>Ellipsaria lineolata</i>	Butterfly	LT	11	2017-06-15

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Rock Island</u>				
<i>Elliptio dilatata</i>	Spike	LT	1	2016-09
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	2	2016-07-18
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	3	1999-08-30
<i>Fundulus diaphanus</i>	Banded Killifish	LT	2	2017-11-14
<i>Fusconaia ebena</i>	Ebonysnail	LE	1	1983-05
<i>Hemidactylium scutatum</i>	Four-toed Salamander	LT	2	2015-04-29
<i>Hybopsis amnis</i>	Pallid Shiner	LE	3	1986-10-07
<i>Lampsilis higginsii</i>	Higgins Eye	LE	9	2016-11-03
<i>Ligumia recta</i>	Black Sandshell	LT	15	2017-06-15
<i>Lycopodium clavatum</i>	Running Pine	LE	1	1988
<i>Necturus maculosus</i>	Mudpuppy	LT	1	1927-09-08
<i>Notropis anogenus</i>	Pugnose Shiner	LE	1	1946
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	1	1999-06
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	1	1993-10-18
<i>Plethobasus cyphus</i>	Sheepnose	LE	3	2016-10-25
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	1	1995-05-11
<u>Total # of Species</u>		<u>27</u>		

Saline

<i>Amorpha nitens</i>	Smooth False Indigo	LE	1	2005
<i>Asclepias meadii</i>	Mead's Milkweed	LE	2	2008
<i>Asio flammeus</i>	Short-eared Owl	LE	1	1992-03
<i>Asplenium bradleyi</i>	Bradley's Spleenwort	LE	1	1997-07-22
<i>Botrychium biternatum</i>	Southern Grape Fern	LE	3	1997-09-23
<i>Carex arkansana</i>	Arkansas Sedge	LE	3	2012-09-25
<i>Carex communis</i>	Fibrous-rooted Sedge	LT	1	1997-05-12
<i>Carex intumescens</i>	Swollen Sedge	LE	1	1992-06-29
<i>Carex oxylepis</i>	Sharp-scaled Sedge	LT	1	1997-07-07
<i>Carex willdenowii</i>	Willdenow's Sedge	LT	1	1994-05-15
<i>Carya aquatica</i>	Water Hickory	LT	1	2009-06-02
<i>Cimicifuga rubifolia</i>	Black Cohosh	LE	1	2000-05-18
<i>Circus cyaneus</i>	Northern Harrier	LE	1	1990-07-06
<i>Crangonyx packardii</i>	Packard's Cave Amphipod	LE	1	2012-08-07
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	4	2016-06-19
<i>Eryngium prostratum</i>	Eryngo	LE	1	1998-09-18
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	1993-06-30
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	1988-06-20
<i>Myotis austroriparius</i>	Southeastern Myotis	LE	1	2016-02-23
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	2016-02-23
<i>Myotis sodalis</i>	Indiana Bat	LE	3	2015-02-05
<i>Neotoma floridana</i>	Eastern Wood Rat	LE	2	2014-08-01

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Saline</u>				
<i>Orconectes indianensis</i>	Indiana Crayfish	LE	5	2017-05-17
<i>Plantago cordata</i>	Heart-leaved Plantain	LE	2	2015-05-31
<i>Poa wolfii</i>	Wolf's Bluegrass	LE	1	2010-05-11
<i>Quercus montana</i>	Rock Chestnut Oak	LT	3	2013-11-01
<i>Rhexia mariana</i>	Dull Meadow Beauty	LE	1	2013-08
<i>Sedum telephioides</i>	American Orpine	LT	3	2016-09-18
<i>Spiranthes vernalis</i>	Spring Ladies' Tresses	LE	1	2006-08-18
<i>Tyto alba</i>	Barn Owl	LT	4	2016-06-02
<u>Total # of Species</u>		<u>30</u>		

Sangamon

<i>Apalone mutica</i>	Smooth Softshell	LE	2	2010-08-20
<i>Asio flammeus</i>	Short-eared Owl	LE	1	2016-04-04
<i>Circus cyaneus</i>	Northern Harrier	LE	1	2007-04-07
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	5	2015-06-30
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	1985-07-27
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	3	1994-06-30
<i>Melanthium virginicum</i>	Bunchflower	LT	1	1955-06-27
<i>Myotis sodalis</i>	Indiana Bat	LE	1	1970-09-01
<i>Necturus maculosus</i>	Mudpuppy	LT	1	2014-04-27
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	1	2007-08-27
<i>Plantago cordata</i>	Heart-leaved Plantain	LE	1	2007-08-23
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	6	2016-09-18
<i>Silene regia</i>	Royal Catchfly	LE	1	2016-07-13
<i>Stellaria pubera</i>	Great Chickweed	LE	1	2016-04-22
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	1978-06-30
<i>Tradescantia bracteata</i>	Prairie Spiderwort	LE	1	2016-05-18
<i>Tropidoclonion lineatum</i>	Lined Snake	LT	6	2001-08-11
<i>Tyto alba</i>	Barn Owl	LT	3	2017-05-07
<u>Total # of Species</u>		<u>18</u>		

Schuyler

<i>Anguilla rostrata</i>	American Eel	LT	2	2014-10-13
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	2	2017-09-22
<i>Carex communis</i>	Fibrous-rooted Sedge	LT	1	1988
<i>Carex prasina</i>	Drooping Sedge	LT	1	2001-08-08
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	1	1985-05-16
<i>Lycopodium dendroideum</i>	Ground Pine	LE	1	1990-03
<i>Moxostoma carinatum</i>	River Redhorse	LT	1	2000
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	2	2002-06-22

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Schuyler</u>				
<i>Myotis sodalis</i>	Indiana Bat	LE	1	1985-07-18
<i>Poa wolfii</i>	Wolf's Bluegrass	LE	1	1991-05-10
<i>Viburnum molle</i>	Arrowwood	LT	1	2004-08-30
<u>Total # of Species</u>		<u>11</u>		

<u>Scott</u>				
<i>Anguilla rostrata</i>	American Eel	LT	1	1988-07-07
<i>Astragalus distortus</i>	Bent Milk Vetch	LE	1	2003
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	2	2017-11-20
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	1	1990s
<i>Fusconaia ebena</i>	Ebonyshell	LE	1	2002-08-06
<i>Hesperia metea</i>	Cobweb Skipper	LE	1	1979-05-10
<i>Hesperia ottoe</i>	Ottoe Skipper	LE	1	1984-07-06
<i>Myotis sodalis</i>	Indiana Bat	LE	2	2017-05-28
<i>Pseudacris illinoensis</i>	Illinois Chorus Frog	LT	2	2014-04-06
<i>Speyeria idalia</i>	Regal Fritillary	LT	1	2012-07-03
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	2008-04-11
<u>Total # of Species</u>		<u>11</u>		

<u>Shelby</u>				
<i>Ammocrypta clarum</i>	Western Sand Darter	LE	3	2007-08-08
<i>Apalone mutica</i>	Smooth Softshell	LE	1	2015-08-14
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	1979-06-26
<i>Botaurus lentiginosus</i>	American Bittern	LE	1	2013-07-14
<i>Camassia angusta</i>	Wild Hyacinth	LE	1	2016-11-10
<i>Carex communis</i>	Fibrous-rooted Sedge	LT	1	1981-05-26
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	1	1994-05-12
<i>Collinsia violacea</i>	Violet Collinsia	LE	1	2017-05-17
<i>Hybopsis amblops</i>	Bigeye Chub	LE	1	1950-07-23
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	2009-07-26
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1983-06-17
<i>Ligumia recta</i>	Black Sandshell	LT	1	2011
<i>Notropis boops</i>	Bigeye Shiner	LE	4	1964-07-03
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	1	2011-06-16
<i>Pandion haliaetus</i>	Osprey	LE	1	2017
<i>Penstemon tubaeiflorus</i>	Tube Beard Tongue	LE	1	1997-06-27
<i>Phalaropus tricolor</i>	Wilson's Phalarope	LE	1	2005-06-23
<i>Plethobasus cyphus</i>	Sheepnose	LE	1	2017-08-24
<i>Rallus elegans</i>	King Rail	LE	1	2013-07-14
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	1967-06-12

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Shelby</u>				
<i>Trifolium reflexum</i>	Buffalo Clover	LT	1	2004-05-19
<i>Tyto alba</i>	Barn Owl	LT	3	2016
<u>Total # of Species</u>		<u>22</u>		

St. Clair

<i>Anguilla rostrata</i>	American Eel	LT	3	1991-08-22
<i>Apalone mutica</i>	Smooth Softshell	LE	1	2015-08-17
<i>Asio flammeus</i>	Short-eared Owl	LE	1	2013-WI
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	1	2015-09
<i>Circus cyaneus</i>	Northern Harrier	LE	1	2013-WI
<i>Egretta caerulea</i>	Little Blue Heron	LE	2	2014-07-14
<i>Egretta thula</i>	Snowy Egret	LE	1	2001-06-16
<i>Fontigens antroecetes</i>	Hydrobiid cave snail	LE	1	2016-12-11
<i>Gallinula galeata</i>	Common Gallinule	LE	5	2004-06-22
<i>Gammarus acherondytes</i>	Illinois Cave Amphipod	LE	1	1965-06-13
<i>Ixobrychus exilis</i>	Least Bittern	LT	2	2015-06-25
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1983-06-30
<i>Malvastrum hispidum</i>	False Mallow	LE	1	2001-11-08
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	2009-07-06
<i>Myotis sodalis</i>	Indiana Bat	LE	2	2014-06-20
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	2	1999-07-14
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	2	2014-06-30
<i>Salvia azurea</i>	Blue Sage	LT	1	1963-09-05
<i>Trifolium reflexum</i>	Buffalo Clover	LT	1	1990-07-25
<i>Trillium viride</i>	Green Trillium	LE	1	1999-05-13
<i>Tyto alba</i>	Barn Owl	LT	7	2016-06-14
<u>Total # of Species</u>		<u>21</u>		

Stark

<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	2011-07-08
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	3	2005-05-24
<i>Notropis heterolepis</i>	Blacknose Shiner	LE	2	2010-08-18
<u>Total # of Species</u>		<u>3</u>		

Stephenson

<i>Alasmidonta viridis</i>	Slippershell	LT	1	2010-06-21
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	2014-05-28
<i>Botrychium multifidum</i>	Northern Grape Fern	LE	1	1978-08-24
<i>Canis lupus</i>	Gray/timber Wolf	LT	1	2012-12-04
<i>Castilleja sessiliflora</i>	Downy Yellow Painted Cup	LE	1	2017

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Stephenson</u>				
<i>Elliptio dilatata</i>	Spike	LT	3	2012-08-30
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	1	2012-07-18
<i>Etheostoma exile</i>	Iowa Darter	LT	1	1971-07-07
<i>Helianthus giganteus</i>	Tall Sunflower	LE	1	2011-08-10
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	3	2007-09-27
<i>Ligumia recta</i>	Black Sandshell	LT	4	2012-08-30
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	1983-06-23
<i>Notropis heterolepis</i>	Blacknose Shiner	LE	1	1991-09-16
<i>Ranunculus rhomboideus</i>	Prairie Buttercup	LT	1	1977-SP
<i>Sullivantia sullivantii</i>	Sullivantia	LT	1	1993-06-17
<u>Total # of Species</u> <u>15</u>				

Tazewell

<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	2	2016-06-22
<i>Anguilla rostrata</i>	American Eel	LT	4	2014-08-24
<i>Asio flammeus</i>	Short-eared Owl	LE	1	2015-02-10
<i>Aster furcatus</i>	Forked Aster	LT	1	1987
<i>Astragalus tennesseensis</i>	Tennessee Milk Vetch	LE	1	2017-05-06
<i>Besseyia bullii</i>	Kittentails	LT	3	2016-07-28
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	2	2017
<i>Circus cyaneus</i>	Northern Harrier	LE	1	2015-02-10
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	2	2017-05-06
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	1	2010-06-06
<i>Fundulus dispar</i>	Starhead Topminnow	LT	2	1967-07-21
<i>Fusconaia ebena</i>	Ebonysnail	LE	1	2012-08-04
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	LT	1	2007
<i>Kinosternon flavescens</i>	Yellow Mud Turtle	LE	4	2009-07-14
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	1990-07-05
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	2	2010-10-20
<i>Lethenteron appendix</i>	American Brook Lamprey	LT	2	1999-07-29
<i>Moxostoma carinatum</i>	River Redhorse	LT	1	1985
<i>Notropis chalybaeus</i>	Ironcolor Shiner	LT	1	1963-07-01
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	1	2003-07
<i>Orobanche ludoviciana</i>	Broomrape	LT	1	2014-08-15
<i>Plantago cordata</i>	Heart-leaved Plantain	LE	1	2000-06-02
<i>Poa wolfii</i>	Wolf's Bluegrass	LE	1	1998-05-28
<i>Polanisia jamesii</i>	James' Clammyweed	LE	1	2012-08-31
<i>Pseudacris illinoensis</i>	Illinois Chorus Frog	LT	3	2016-06-03
<i>Speyeria idalia</i>	Regal Fritillary	LT	1	2012-06-10
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	2008-06-06
<i>Tetrameuris herbacea</i>	Lakeside Daisy	LE	1	2013-05-02

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Total # of Species</u> <u>28</u>				
<u>Union</u>				
<i>Agalinis skinneriana</i>	Pale False Foxglove	LT	1	2005-10
<i>Ammocrypta clarum</i>	Western Sand Darter	LE	1	1997
<i>Anguilla rostrata</i>	American Eel	LT	1	2013-09-06
<i>Asplenium bradleyi</i>	Bradley's Spleenwort	LE	2	1994-09
<i>Asplenium resiliens</i>	Black Spleenwort	LE	3	2005-06-18
<i>Botrychium bitermatum</i>	Southern Grape Fern	LE	1	1996-10-13
<i>Caprimulgus carolinensis</i>	Chuck-will's-widow	LT	1	2009-06-02
<i>Carex decomposita</i>	Cypress-knee Sedge	LE	1	2014-06-14
<i>Carex gigantea</i>	Large Sedge	LE	1	2005-06-18
<i>Carex nigromarginata</i>	Black-edged Sedge	LE	1	2011-06-28
<i>Carex oxylepis</i>	Sharp-scaled Sedge	LT	2	2013-08-07
<i>Carex physorhyncha</i>	Bellows Beak Sedge	LE	2	1983-04-19
<i>Carex willdenowii</i>	Willdenow's Sedge	LT	1	1988-05-26
<i>Carya aquatica</i>	Water Hickory	LT	1	1957-06-27
<i>Carya pallida</i>	Pale Hickory	LE	3	2014
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	LE	1	2013-08-21
<i>Crangonyx packardii</i>	Packard's Cave Amphipod	LE	1	1965-06
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	7	2017-04-10
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	2	2007-06-12
<i>Dichanthelium jorii</i>	Panic Grass	LE	1	1988
<i>Dodecatheon frenchii</i>	French's Shootingstar	LT	2	2016-05-03
<i>Euonymus americanus</i>	American Strawberry Bush	LT	2	2005-10-16
<i>Fundulus dispar</i>	Starhead Topminnow	LT	3	2016-04-17
<i>Gallinula galeata</i>	Common Gallinule	LE	1	1993-07-30
<i>Gastrophryne carolinensis</i>	Eastern Narrowmouth Toad	LT	1	1969-06-03
<i>Glyceria arkansana</i>	Arkansas Mannagrass	LE	2	2013-08-29
<i>Heteranthera reniformis</i>	Mud Plantain	LE	2	2001-10-26
<i>Hybognathus hayi</i>	Cypress Minnow	LE	1	1997-08-19
<i>Hydrolea uniflora</i>	One-flowered Hydrolea	LE	1	1977-09-14
<i>Hyla avivoca</i>	Bird-voiced Treefrog	LT	3	2014
<i>Ictinia mississippiensis</i>	Mississippi Kite	LT	2	2013-07-06
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	1993-07-30
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1989-05-06
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	2	2004-06-01
<i>Lepomis symmetricus</i>	Bantam Sunfish	LT	6	2009-07-08
<i>Macrochelys temminckii</i>	Alligator Snapping Turtle	LE	1	2015-10-16
<i>Matelea decipiens</i>	Climbing Milkweed	LE	1	2013-08-08
<i>Melothria pendula</i>	Squirting Cucumber	LT	5	2002-08-28
<i>Moxostoma carinatum</i>	River Redhorse	LT	1	2003-07-02

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Union</u>				
<i>Myotis austroriparius</i>	Southeastern Myotis	LE	3	2016-02-14
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	9	2016-02-14
<i>Myotis sodalis</i>	Indiana Bat	LE	9	2016-08-05
<i>Necturus maculosus</i>	Mudpuppy	LT	1	2010-03-14
<i>Neotoma floridana</i>	Eastern Wood Rat	LE	3	2017-04-20
<i>Nerodia cyclopion</i>	Mississippi Green Watersnake	LT	1	2010-10-14
<i>Notropis boops</i>	Bigeye Shiner	LE	8	2016-07-14
<i>Notropis texanus</i>	Weed Shiner	LE	1	2007
<i>Pinus echinata</i>	Shortleaf Pine	LE	2	2017-03-01
<i>Prostoia completa</i>	Central Forestfly	LE	2	2002-03-23
<i>Quercus montana</i>	Rock Chestnut Oak	LT	1	2003-06-06
<i>Quercus phellos</i>	Willow Oak	LT	1	2007-05-22
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE	1	2015-04-27
<i>Styrax americana</i>	Storax	LT	1	2010-07-28
<i>Talinum parviflorum</i>	Small Flower-of-an-hour	LT	1	1973-07-11
<i>Tantilla gracilis</i>	Flathead Snake	LT	1	2013-09
<i>Torreyochloa pallida</i>	Grass	LE	1	2005-06-18
<i>Trillium viride</i>	Green Trillium	LE	1	2017-05-02
<i>Tyto alba</i>	Barn Owl	LT	11	2015-06-10
<i>Urtica chamaedryoides</i>	Nettle	LT	6	2017-10-18
<i>Villosa lienosa</i>	Little Spectaclecase	LT	3	2013-09-10
<u>Total # of Species</u> <u>60</u>				

Vermilion

<i>Alasmodonta viridis</i>	Slippershell	LT	13	2016-09-23
<i>Ambystoma platineum</i>	Silvery Salamander	LE	6	2016-SU
<i>Ammocrypta pellucidum</i>	Eastern Sand Darter	LT	9	2011-09-06
<i>Anguilla rostrata</i>	American Eel	LT	1	2016-06-14
<i>Apalone mutica</i>	Smooth Softshell	LE	1	2012-09-13
<i>Asclepias meadii</i>	Mead's Milkweed	LE	1	2012-06-21
<i>Asio flammeus</i>	Short-eared Owl	LE	2	1990-06-29
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	1986-07-04
<i>Calephelis muticum</i>	Swamp Metalmark	LE	1	1989-06-18
<i>Carex bromoides</i>	Sedge	LT	1	2012-05-15
<i>Carex communis</i>	Fibrous-rooted Sedge	LT	5	2016-05-14
<i>Carex prasina</i>	Drooping Sedge	LT	1	2014-07-02
<i>Carex willdenowii</i>	Willdenow's Sedge	LT	1	1998
<i>Circus cyaneus</i>	Northern Harrier	LE	3	1990-06-28
<i>Cyclonaias tuberculata</i>	Purple Wartyback	LT	19	2017-07-14
<i>Cypripedium parviflorum</i>	Small Yellow Lady's Slipper	LE	3	2012-05-09
<i>Diploperla robusta</i>	Robust Springfly	LE	1	2009-04

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Vermilion</u>				
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	2	2016-06-24
<i>Epioblasma torulosa rangiana</i>	Northern Riffleshell	LE	5	2016-FA
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	1	1997-10-07
<i>Etheostoma camurum</i>	Bluebreast Darter	LE	18	2017-07-20
<i>Etheostoma exile</i>	Iowa Darter	LT	3	2004-07-24
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	2	2016-07-11
<i>Hemidactylium scutatum</i>	Four-toed Salamander	LT	1	2012-11-10
<i>Hybopsis amblops</i>	Bigeye Chub	LE	15	2017-07-20
<i>Ixobrychus exilis</i>	Least Bittern	LT	2	2012-06-14
<i>Lampsilis fasciola</i>	Wavy-rayed Lampmussel	LE	25	2017-07-14
<i>Lethenteron appendix</i>	American Brook Lamprey	LT	1	2001-01-23
<i>Ligumia recta</i>	Black Sandshell	LT	3	2014-08-13
<i>Moxostoma carinatum</i>	River Redhorse	LT	8	2014-09-17
<i>Myotis austroriparius</i>	Southeastern Myotis	LE	2	1996
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	4	2014-09-02
<i>Myotis sodalis</i>	Indiana Bat	LE	3	2016-10-20
<i>Necturus maculosus</i>	Mudpuppy	LT	2	2015-10-07
<i>Nocomis micropogon</i>	River Chub	LE	2	2001-05-19
<i>Notropis boops</i>	Bigeye Shiner	LE	7	2013-07-30
<i>Noturus stigmosus</i>	Northern Madtom	LE	1	1962-08
<i>Pleurobema clava</i>	Clubshell	LE	6	2016-09-03
<i>Poa languida</i>	Weak Bluegrass	LE	1	2012-05-14
<i>Poa wolfii</i>	Wolf's Bluegrass	LE	2	2012-05-14
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	1	2009-05-23
<i>Ptychobranhus fasciolaris</i>	Kidneyshell	LE	3	2011-09-20
<i>Quadrula cylindrica</i>	Rabbitsfoot	LE	5	2014-08-12
<i>Scirpus hattorianus</i>	Bulrush	LE	1	2012-09-10
<i>Silene regia</i>	Royal Catchfly	LE	1	2015-07-16
<i>Simpsonaias ambigua</i>	Salamander Mussel	LE	5	2016-11-02
<i>Toxolasma lividus</i>	Purple Lilliput	LE	8	2014-08-29
<i>Villosa iris</i>	Rainbow	LE	10	2015-10-07
<i>Villosa lienosa</i>	Little Spectaclecase	LT	18	2016-09-23
<u>Total # of Species</u>		<u>49</u>		

Wabash

<i>Ammocrypta pellucidum</i>	Eastern Sand Darter	LT	1	1940
<i>Anguilla rostrata</i>	American Eel	LT	2	2013
<i>Chlidonias niger</i>	Black Tern	LE	1	2002-07-19
<i>Clematis crispa</i>	Blue Jasmine	LE	1	2004-06-26
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	1	1994-SUM
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	1	2015-06-28

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Wabash</u>				
<i>Elliptio crassidens</i>	Elephant-ear	LE	5	2012-08-23
<i>Elliptio dilatata</i>	Spike	LT	1	2012-08-14
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	1	1940
<i>Etheostoma histrio</i>	Harlequin Darter	LE	4	2011-06-22
<i>Fusconaia ebena</i>	Ebonysnail	LE	2	2012-08-15
<i>Iresine rhizomatosa</i>	Bloodleaf	LE	2	2014-09-11
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	1990-07
<i>Limnothlypis swainsonii</i>	Swainson's Warbler	LE	1	2005-05-07
<i>Lithasia obovata</i>	Shawnee Rocksnail	LE	1	1991-09-26
<i>Noturus stigmosus</i>	Northern Madtom	LE	1	1964-11-05
<i>Phalaropus tricolor</i>	Wilson's Phalarope	LE	1	2013-05-27
<i>Potamilus capax</i>	Fat Pocketbook	LE	8	2016-10-18
<i>Sternula antillarum</i>	Least Tern	LE	4	2014-05-25

Total # of Species **19**

Warren

<i>Ligumia recta</i>	Black Sandshell	LT	1	2012-08-20
<i>Melanthium virginicum</i>	Bunchflower	LT	1	2016-07-11
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	2011-08-07
<i>Myotis sodalis</i>	Indiana Bat	LE	1	2011-08-04
<i>Sistrurus catenatus</i>	Massasauga	LE	1	1972

Total # of Species **5**

Washington

<i>Hybognathus hayi</i>	Cypress Minnow	LE	2	1940
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	4	1990
<i>Myotis sodalis</i>	Indiana Bat	LE	1	2006-08-08
<i>Platanthera flava</i>	Tubercled Orchid	LT	1	2001-05-31
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	1	2011-05-09
<i>Trifolium reflexum</i>	Buffalo Clover	LT	5	2017-05-31
<i>Tyto alba</i>	Barn Owl	LT	3	2015-07-18

Total # of Species **7**

Wayne

<i>Elliptio dilatata</i>	Spike	LT	1	1979-10-03
<i>Fusconaia ebena</i>	Ebonysnail	LE	1	2007-08-08
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	2015-08
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	7	2015-07-09
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	1	2015-SU
<i>Rallus elegans</i>	King Rail	LE	1	2014-06-15

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
Wayne				
<i>Stenanthium gramineum</i>	Grass-leaved Lily	LT	1	2011-04-14
<i>Styrax americana</i>	Storax	LT	2	2001-08-01
<i>Thamnophis sauritus</i>	Eastern Ribbon Snake	LT	1	2007-04-23
<i>Tyto alba</i>	Barn Owl	LT	7	2015-07-22
<i>Villosa lienosa</i>	Little Spectaclecase	LT	4	2013-09-04
<u>Total # of Species</u> <u>11</u>				

White

<i>Anguilla rostrata</i>	American Eel	LT	4	2013-09-18
<i>Cryptobranchus alleganiensis</i>	Hellbender	LE	1	1990-08-08
<i>Crystallaria asprella</i>	Crystal Darter	LT	1	1899
<i>Cyclonaias tuberculata</i>	Purple Wartback	LT	1	1999-09-15
<i>Cyprogenia stegaria</i>	Fanshell	LE	1	1984-08-22
<i>Elliptio crassidens</i>	Elephant-ear	LE	1	1984-08-22
<i>Elliptio dilatata</i>	Spike	LT	1	1988-07-06
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	1	2000-09-19
<i>Etheostoma histrio</i>	Harlequin Darter	LE	8	2015-08-31
<i>Fusconaia ebena</i>	Ebonysell	LE	5	2002-07-17
<i>Lepomis miniatus</i>	Redspotted Sunfish	LE	3	2004-06-23
<i>Lithasia obovata</i>	Shawnee Rocksnail	LE	4	2012-07-11
<i>Moxostoma carinatum</i>	River Redhorse	LT	1	2013-08-29
<i>Orconectes indianensis</i>	Indiana Crayfish	LE	1	1987-07-21
<i>Phaeophyscia leana</i>	Lea's Bog Lichen	LT	4	2015-12-08
<i>Potamilus capax</i>	Fat Pocketbook	LE	10	2014-07-30
<i>Pseudemys concinna</i>	River Cooter	LE	3	2013-04-02
<i>Sternula antillarum</i>	Least Tern	LE	1	2005-07-06
<i>Toxolasma lividus</i>	Purple Lilliput	LE	1	2012-09-10
<i>Tympanuchus cupido</i>	Greater Prairie-Chicken	LE	1	1998-04-16
<i>Tyto alba</i>	Barn Owl	LT	1	1984-08
<u>Total # of Species</u> <u>21</u>				

Whiteside

<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	3	2016-05-17
<i>Anguilla rostrata</i>	American Eel	LT	5	2016-10-18
<i>Apalone mutica</i>	Smooth Softshell	LE	1	2014-07-10
<i>Astragalus distortus</i>	Bent Milk Vetch	LE	1	1982-05-10
<i>Besseyia bullii</i>	Kittentails	LT	3	2011
<i>Canis lupus</i>	Gray/timber Wolf	LT	1	2012-12-09
<i>Carex heliophila</i>	Plains Sedge	LE	1	2014-05-22
<i>Crystallaria asprella</i>	Crystal Darter	LT	1	1901

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Whiteside</u>				
<i>Cyperus grayoides</i>	Umbrella Sedge	LT	2	2017
<i>Ellipsaria lineolata</i>	Butterfly	LT	2	2012-08-23
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	4	2017-07-13
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	7	2008-08-21
<i>Fundulus diaphanus</i>	Banded Killifish	LT	1	2013-07-22
<i>Fundulus dispar</i>	Starhead Topminnow	LT	1	2007-06-04
<i>Gallinula galeata</i>	Common Gallinule	LE	1	2004-06-24
<i>Heterodon nasicus</i>	Plains Hog-nosed Snake	LT	4	2016-08-22
<i>Hudsonia tomentosa</i>	False Heather	LE	1	2016-05-27
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	2002-06-12
<i>Kinosternon flavescens</i>	Yellow Mud Turtle	LE	2	1989-05-31
<i>Lampsilis higginsii</i>	Higgins Eye	LE	2	2016-10-30
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	2005-07-04
<i>Ligumia recta</i>	Black Sandshell	LT	7	2016-10-30
<i>Mimulus glabratus</i>	Yellow Monkey Flower	LE	1	2005-08-03
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	4	2008-08-06
<i>Nothocalais cuspidata</i>	Prairie Dandelion	LE	1	2007-07
<i>Notropis anogenus</i>	Pugnose Shiner	LE	1	1946
<i>Notropis heterolepis</i>	Blacknose Shiner	LE	2	1966-08-11
<i>Notropis texanus</i>	Weed Shiner	LE	6	2016-07-13
<i>Orobanche ludoviciana</i>	Broomrape	LT	4	2017-06-03
<i>Penstemon grandiflorus</i>	Large-flowered Beard Tongue	LE	2	2017
<i>Pinus banksiana</i>	Jack Pine	LE	1	2005
<i>Plethobasus cyphus</i>	Sheepnose	LE	1	2007-08-24
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	1	2016-03-11
<i>Salvia azurea</i>	Blue Sage	LT	1	2003-09-09
<i>Speyeria idalia</i>	Regal Fritillary	LT	3	2017-07-06
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	3	2017-07-10
<i>Tyto alba</i>	Barn Owl	LT	1	1990-06-08
<i>Viola canadensis</i>	Canada Violet	LE	1	1990
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	1	2002-06-13
<u>Total # of Species</u>		<u>39</u>		

Will

<i>Aflexia rubranura</i>	Redveined Prairie Leafhopper	LT	2	2005-SU
<i>Alasmidonta viridis</i>	Slippershell	LT	13	2015-09
<i>Ammocrypta clarum</i>	Western Sand Darter	LE	2	2017-08-03
<i>Asclepias meadii</i>	Mead's Milkweed	LE	2	2012
<i>Aster furcatus</i>	Forked Aster	LT	2	2012-08-30
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	4	2013-05-07
<i>Beckmannia syzigachne</i>	American Slough Grass	LE	1	2004-07-20

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Will</u>				
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	1	2014-06-26
<i>Calopogon oklahomensis</i>	Oklahoma grass pink orchid	LE	2	2013-06-11
<i>Calopogon tuberosus</i>	Grass Pink Orchid	LE	3	2013-07-09
<i>Carex viridula</i>	Little Green Sedge	LT	1	2013-07-04
<i>Circus cyaneus</i>	Northern Harrier	LE	1	2000
<i>Clemmys guttata</i>	Spotted Turtle	LE	2	2016-06-19
<i>Clonophis kirtlandi</i>	Kirtland's Snake	LT	2	2015-06-17
<i>Corallorhiza maculata</i>	Spotted Coral-root Orchid	LE	2	1990-SUM
<i>Corydalis aurea</i>	Golden Corydalis	LE	1	2012-04-25
<i>Cyclonaias tuberculata</i>	Purple Wartyback	LT	5	2016-08-15
<i>Dalea foliosa</i>	Leafy Prairie Clover	LE	6	2017-10-20
<i>Dichanthelium boreale</i>	Northern Panic Grass	LE	2	2010
<i>Drosera intermedia</i>	Narrow-leaved Sundew	LT	3	2017-08-11
<i>Eleocharis rostellata</i>	Beaked Spike Rush	LT	1	2004-07-09
<i>Elliptio dilatata</i>	Spike	LT	4	2015-09-02
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	11	2016-08-17
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	1	2005-08-23
<i>Etheostoma exile</i>	Iowa Darter	LT	12	2016-07-19
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	3	2017-07-27
<i>Fundulus diaphanus</i>	Banded Killifish	LT	4	2017-08-17
<i>Fundulus dispar</i>	Starhead Topminnow	LT	1	1989-05-31
<i>Gallinula galeata</i>	Common Gallinule	LE	3	1999-06-28
<i>Geranium bicknellii</i>	Northern Cranesbill	LE	1	2013-06-06
<i>Gratiola quartermantiae</i>	Hedge Hyssop	LE	1	2017-06-13
<i>Hemidactylium scutatum</i>	Four-toed Salamander	LT	2	2015-04-29
<i>Hybopsis amnis</i>	Pallid Shiner	LE	7	2014-09-14
<i>Hypericum adpressum</i>	Shore St. John's Wort	LE	2	2017-07-26
<i>Isoetes butleri</i>	Quillwort	LE	7	2017-06-06
<i>Ixobrychus exilis</i>	Least Bittern	LT	2	1999-06-28
<i>Juncus alpinoarticulatus</i>	Richardson's Rush	LT	1	2007-06-28
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	2015
<i>Ligumia recta</i>	Black Sandshell	LT	6	2016-08-15
<i>Lycopodium clavatum</i>	Running Pine	LE	1	1993
<i>Malvastrum hispidum</i>	False Mallow	LE	3	2017-08-18
<i>Minuartia patula</i>	Slender Sandwort	LT	6	2017-10-20
<i>Mirabilis hirsuta</i>	Hairy Umbrella-wort	LE	1	2005-08-02
<i>Moxostoma carinatum</i>	River Redhorse	LT	7	2016-11-14
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	7	2013-07-18
<i>Necturus maculosus</i>	Mudpuppy	LT	3	2012-10-12
<i>Notropis boops</i>	Bigeye Shiner	LE	1	1983-07-13
<i>Notropis chalybaeus</i>	Ironcolor Shiner	LT	1	1986-07-17

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
Will				
<i>Notropis heterolepis</i>	Blacknose Shiner	LE	3	2014-08-21
<i>Notropis texanus</i>	Weed Shiner	LE	3	2013-08-30
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	LE	1	2012
<i>Pandion haliaetus</i>	Osprey	LE	2	2017-09
<i>Papaipema eryngii</i>	Eryngium Stem Borer	LT	3	2016-08-05
<i>Pinus banksiana</i>	Jack Pine	LE	1	1976-07-27
<i>Plantago cordata</i>	Heart-leaved Plantain	LE	1	1966-06
<i>Platanthera clavellata</i>	Wood Orchid	LE	1	2008-07-16
<i>Platanthera flava</i>	Tubercled Orchid	LT	4	2017-07-26
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid	LE	1	2017
<i>Plethobasus cyphus</i>	Sheepnose	LE	4	2016-08-15
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	3	2009-08-31
<i>Potamogeton gramineus</i>	Grass-leaved Pondweed	LT	1	2005-06-02
<i>Rallus elegans</i>	King Rail	LE	2	1993-06-24
<i>Rubus schneideri</i>	Bristly Blackberry	LT	2	2005-06-02
<i>Salvia azurea</i>	Blue Sage	LT	1	2009-09-17
<i>Sanguisorba canadensis</i>	American Burnet	LE	4	2017-08-30
<i>Scirpus hattorianus</i>	Bulrush	LE	2	2006-08-10
<i>Scleria pauciflora</i>	Carolina Whipgrass	LE	1	2006-09-02
<i>Silene regia</i>	Royal Catchfly	LE	1	2017-07-27
<i>Simpsonaias ambigua</i>	Salamander Mussel	LE	1	2014-07-22
<i>Sistrurus catenatus</i>	Massasauga	LE	1	2001
<i>Somatochlora hineana</i>	Hine's Emerald Dragonfly	LE	5	2017-06
<i>Spiranthes lucida</i>	Yellow-lipped Ladies' Tresses	LE	1	2011-06-07
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	3	2015-05-12
<i>Tetrameuris herbacea</i>	Lakeside Daisy	LE	2	2017-04-26
<i>Trifolium reflexum</i>	Buffalo Clover	LT	2	2017-07-17
<i>Triglochin maritima</i>	Common Bog Arrow Grass	LT	1	1988-05-21
<i>Triglochin palustris</i>	Slender Bog Arrow Grass	LT	2	2004-07-09
<i>Tyto alba</i>	Barn Owl	LT	1	2006-09-29
<i>Utricularia intermedia</i>	Flat-leaved Bladderwort	LT	1	2017-07-14
<i>Vaccinium macrocarpon</i>	Large Cranberry	LE	2	2012
<i>Valerianella chenopodifolia</i>	Corn Salad	LE	1	1987-05-02
<i>Valerianella umbilicata</i>	Corn Salad	LE	3	2017-06-10
<i>Veronica scutellata</i>	Marsh Speedwell	LT	1	2016-09-01
<i>Viola canadensis</i>	Canada Violet	LE	1	1986
<i>Viola primulifolia</i>	Primrose Violet	LE	1	2010-09-03
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	LE	1	1991-05-09
Total # of Species		86		

Williamson

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Williamson</u>				
<i>Asplenium bradleyi</i>	Bradley's Spleenwort	LE	1	1994-09
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	1987
<i>Caprimulgus carolinensis</i>	Chuck-will's-widow	LT	2	2015-06-03
<i>Carex physorhyncha</i>	Bellows Beak Sedge	LE	1	1983-04-19
<i>Crotalus horridus</i>	Timber Rattlesnake	LT	2	1993-06-07
<i>Dodecatheon frenchii</i>	French's Shootingstar	LT	1	2015-05-22
<i>Eryngium prostratum</i>	Eryngo	LE	2	2013-07-06
<i>Ixobrychus exilis</i>	Least Bittern	LT	1	1993-06-30
<i>Lampetra aepyptera</i>	Least Brook Lamprey	LT	1	2010-10-08
<i>Matelea decipiens</i>	Climbing Milkweed	LE	2	2013-08-08
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	1989-08-22
<i>Myotis sodalis</i>	Indiana Bat	LE	3	2017-05-20
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	2	2014-04
<i>Orconectes indianensis</i>	Indiana Crayfish	LE	8	2017-05-17
<i>Pinus echinata</i>	Shortleaf Pine	LE	1	1984-04-29
<i>Rhexia mariana</i>	Dull Meadow Beauty	LE	5	2013-08-05
<i>Scleria pauciflora</i>	Carolina Whipgrass	LE	1	1983-07-04
<i>Spiranthes vernalis</i>	Spring Ladies' Tresses	LE	2	2013-07-06
<i>Thryomanes bewickii</i>	Bewick's Wren	LE	1	1987-06-24
<i>Trillium viride</i>	Green Trillium	LE	1	1987-04-27
<i>Tyto alba</i>	Barn Owl	LT	5	2016-06-14
<u>Total # of Species</u> <u>21</u>				

Winnebago

<i>Acipenser fulvescens</i>	Lake Sturgeon	LE	1	2009-05
<i>Alasmidonta viridis</i>	Slippershell	LT	1	2011-08-02
<i>Alnus incana ssp. rugosa</i>	Speckled Alder	LE	1	1991-05-06
<i>Amelanchier interior</i>	Shadbush	LT	1	1993-08-30
<i>Ammocrypta clarum</i>	Western Sand Darter	LE	1	1968-08-17
<i>Arctostaphylos uva-ursi</i>	Bearberry	LE	1	1987
<i>Artemisia dracunculus</i>	Dragon Wormwood	LE	2	2004-08-19
<i>Asclepias lanuginosa</i>	Wooly Milkweed	LE	4	2008-06-12
<i>Aster furcatus</i>	Forked Aster	LT	4	2001-08-24
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	2	1988-06-26
<i>Besseyia bullii</i>	Kittentails	LT	9	2017-06-16
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	LE	6	2017-08-08
<i>Botrychium matricariifolium</i>	Daisyleaf Grape Fern	LE	2	1993-06-12
<i>Botrychium multifidum</i>	Northern Grape Fern	LE	2	1987
<i>Botrychium simplex</i>	Dwarf Grape Fern	LE	2	1993-06-12
<i>Calopogon tuberosus</i>	Grass Pink Orchid	LE	1	1977-11-04
<i>Carex echinata</i>	Sedge	LE	1	1988-07-02

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Winnebago</u>				
<i>Carex heliophila</i>	Plains Sedge	LE	3	1957-05-26
<i>Castilleja sessiliflora</i>	Downy Yellow Painted Cup	LE	1	2013-08-12
<i>Ceanothus herbaceus</i>	Redroot	LE	1	2017
<i>Chimaphila umbellata</i>	Pipsissewa	LE	3	1993-06-12
<i>Circus cyaneus</i>	Northern Harrier	LE	1	1991-07
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	LT	1	2017-05-25
<i>Comptonia peregrina</i>	Sweetfern	LE	1	1993-10-21
<i>Corallorhiza maculata</i>	Spotted Coral-root Orchid	LE	3	1998
<i>Cyclonaias tuberculata</i>	Purple Wartyback	LT	1	1986-06-17
<i>Dendroica cerulea</i>	Cerulean Warbler	LT	2	2017-06-16
<i>Elliptio dilatata</i>	Spike	LT	1	2005-08-25
<i>Elymus trachycaulus</i>	Bearded Wheat Grass	LE	1	1977
<i>Emydoidea blandingii</i>	Blanding's Turtle	LE	6	2017-05-05
<i>Erimystax x-punctatus</i>	Gravel Chub	LT	9	2016-09-08
<i>Etheostoma exile</i>	Iowa Darter	LT	6	2017-06-13
<i>Fundulus dispar</i>	Starhead Topminnow	LT	2	2011-07-19
<i>Helianthus giganteus</i>	Tall Sunflower	LE	2	1995-09-18
<i>Hesperia ottoe</i>	Ottoe Skipper	LE	2	1991-07
<i>Hybognathus hankinsoni</i>	Brassy Minnow	LT	5	2013-07-26
<i>Ictinia mississippiensis</i>	Mississippi Kite	LT	1	2017-07-05
<i>Juncus vaseyi</i>	Vasey's Rush	LE	1	1994
<i>Juniperus communis</i>	Ground Juniper	LT	2	2005-02-19
<i>Juniperus horizontalis</i>	Trailing Juniper	LE	1	2005-02-17
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	2	2005-07-06
<i>Lechea intermedia</i>	Pinweed	LE	1	1977
<i>Lespedeza leptostachya</i>	Prairie Bush Clover	LE	4	2017-08-03
<i>Lethenteron appendix</i>	American Brook Lamprey	LT	5	2016-08-10
<i>Ligumia recta</i>	Black Sandshell	LT	10	2017-09-06
<i>Necturus maculosus</i>	Mudpuppy	LT	1	2012-07-16
<i>Notropis texanus</i>	Weed Shiner	LE	1	1963-08-29
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	LE	1	2010-08-21
<i>Pandion haliaetus</i>	Osprey	LE	1	2017-07-05
<i>Penstemon grandiflorus</i>	Large-flowered Beard Tongue	LE	2	2015-07-08
<i>Poliocitellus franklinii</i>	Franklin's Ground Squirrel	LT	1	1958-06
<i>Rallus elegans</i>	King Rail	LE	1	1995
<i>Ranunculus rhomboideus</i>	Prairie Buttercup	LT	2	1995-04-28
<i>Sambucus racemosa ssp. pubens</i>	Red-berried Elder	LE	2	1988-06
<i>Sparganium americanum</i>	American Bur-reed	LE	1	1987-06-30
<i>Speyeria idalia</i>	Regal Fritillary	LT	1	2015-SU
<i>Terrapene ornata</i>	Ornate Box Turtle	LT	2	2013-07-05
<i>Ulmus thomasii</i>	Rock Elm	LE	1	1988

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>	<u># of Occurrences</u>	<u>Last Observed</u>
<u>Winnebago</u>				
<i>Vaccinium corymbosum</i>	Highbush Blueberry	LE	1	1988-08
<u>Total # of Species</u> <u>59</u>				
<u>Woodford</u>				
<i>Anguilla rostrata</i>	American Eel	LT	2	1982
<i>Bartramia longicauda</i>	Upland Sandpiper	LE	1	2010-07-01
<i>Boltonia decurrens</i>	Decurrent False Aster	LT	4	2017-10-04
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	LT	1	2009-06-28
<i>Cypripedium reginae</i>	Showy Lady's Slipper	LE	1	1999-06-10
<i>Elliptio dilatata</i>	Spike	LT	1	2001-08-31
<i>Filipendula rubra</i>	Queen-of-the-prairie	LT	1	2013-07-25
<i>Fundulus dispar</i>	Starhead Topminnow	LT	1	1989-07-05
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	2007-06-30
<i>Lepomis symmetricus</i>	Bantam Sunfish	LT	1	1998-10-14
<i>Mimulus glabratus</i>	Yellow Monkey Flower	LE	1	1989-06-23
<i>Myotis septentrionalis</i>	Northern Long-eared Myotis	LT	1	1985-06-13
<i>Myotis sodalis</i>	Indiana Bat	LE	1	2011-04-14
<i>Necturus maculosus</i>	Mudpuppy	LT	1	2017-11-07
<i>Pandion haliaetus</i>	Osprey	LE	1	2017-08
<i>Spiranthes lucida</i>	Yellow-lipped Ladies' Tresses	LE	1	1968-05-25
<i>Viburnum molle</i>	Arrowwood	LT	1	1999-09-02
<u>Total # of Species</u> <u>17</u>				

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

Land Protection Programs:

LWR = Land and Water Reserve

NHL = Natural Heritage Landmark

NP = Nature Preserve

<u>INPC Protected Areas</u>	<u>INPC Number</u>	
Adams		
Byler Cemetery Savanna Nature Preserve	NP159	
Burton Cave Nature Preserve	NP145	
Robert A. Evers Land and Water Reserve	LWR092	
Fall Creek Gorge Land and Water Reserve	LWR084	
Total # of Areas in County		4
Alexander		
Horseshoe Lake Nature Preserve	NP019	
Total # of Areas in County		1
Boone		
Flora Prairie Nature Preserve	NP227	
Kinnikinnick Creek Nature Preserve	NP053	
Total # of Areas in County		2
Brown		
Robert A. Evers Land and Water Reserve	LWR092	
Total # of Areas in County		1
Bureau		
McCune Sand Prairie Land and Water Reserve	LWR149	
Hetzler Cemetery Prairie Nature Preserve	NP161	
Miller-Anderson Woods Nature Preserve	NP023	
Myer Woods Nature Preserve	NP063	
Total # of Areas in County		4
Calhoun		
Swarnes Hill Prairie Natural Heritage Landmark	NHL096	
Jennings Family Hill Prairie Nature Preserve	NP290	
Two Branch Peace Prairie Land and Water Reserve	LWR122	
Kopp's Glade Natural Heritage Landmark	NHL113	
Total # of Areas in County		4
Carroll		
Savanna South Railroad Prairie Natural Heritage Landmark	NHL164	
Sterling Rock Falls Family YMCA Camp Merrill M. Benson L	LWR116	
Brookville Lutheran Cemetery Prairie Nature Preserve	NP118	
Sentinel Nature Preserve	NP200	
Thomson - Fulton Railroad Prairie Natural Heritage Landmark	NHL162	
Ayers Sand Prairie Nature Preserve	NP050	
Total # of Areas in County		6
Cass		
Beardstown Railroad Prairie Natural Heritage Landmark	NHL165	
Charles "Chinee" Colvin Sand Prairie Land and Water Reserve	LWR072	

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Bluff Springs Hill Prairie Natural Heritage Landmark	NHL154	
Illinois River Sand Areas Land and Water Reserve	LWR068	
The Slough Natural Heritage Landmark	NHL122	
Cox Creek Hill Prairies Land and Water Reserve	LWR027	
Chandlerville Cemetery Hill Prairie Land and Water Reserve	LWR054	
Excel Sand Prairie Natural Heritage Landmark	NHL101	
Shick Shack Sand Pond Nature Preserve	NP133	
Panther Creek Hill Prairie Land and Water Reserve	LWR085	
Bluff Springs Sand Pond Natural Heritage Landmark	NHL124	
Total # of Areas in County		11
Champaign		
Wolf Ridge Natural Heritage Landmark	NHL202	
Barnhart Prairie Restoration Nature Preserve	NP326	
Edna Edwards Burnett Land and Water Reserve	LWR181	
Tomlinson Pioneer Cemetery Prairie Nature Preserve	NP134	
Smith House Natural Heritage Landmark	NHL176	
Edgewood Farm Land and Water Reserve	LWR050	
Alexander's Dell Natural Heritage Landmark	NHL168	
River Bend Land and Water Reserve	LWR066	
Total # of Areas in County		8
Christian		
Anderson Prairie Land and Water Reserve	LWR031	
Total # of Areas in County		1
Clark		
Riedle's Bluffs Natural Heritage Landmark	NHL178	
Miller's Rocky Branch Land and Water Reserve	LWR040	
American Beech Woods Nature Preserve	NP130	
Rocky Branch Nature Preserve	NP103	
Total # of Areas in County		4
Clay		
Martin T. Snyder Memorial Nature Preserve	NP296	
Flag Pond Land and Water Reserve	LWR157	
Padgett Brothers Sweet Gum Woods Land and Water Reserve	LWR043	
Total # of Areas in County		3
Clinton		
Buck Hill Bottom Land and Water Reserve	LWR144	
Lost Creek Marsh Nature Preserve	NP329	
Schulte Woods Nature Preserve	NP330	
Lost Creek Marsh Land and Water Reserve	LWR128	
Nature's Way Natural Heritage Landmark	NHL136	
Total # of Areas in County		5

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<u>INPC Protected Areas</u>	<u>INPC Number</u>	
Coles		
Ambraw Woods Land and Water Reserve	LWR182	
Woodyard Memorial Conservation Area Land and Water Res	LWR088	
Warbler Woods North Land and Water Reserve	LWR186	
Embarras Bluffs Natural Heritage Landmark	NHL198	
Embarras River Land and Water Reserve	LWR034	
Warbler Woods Nature Preserve	NP286	
Sargent's Woods Land and Water Reserve	LWR051	
J. Virgil Fishel Hillside Marsh Natural Heritage Landmark	NHL061	
Warbler Woods Land and Water Reserve	LWR003	
Embarras Bend Natural Heritage Landmark	NHL210	
Embarras Ridges Land and Water Reserve	LWR168	
Total # of Areas in County		11
Cook		
Glenview Naval Air Station Prairie Nature Preserve	NP390	
Jens Jensen Grasslands and Woods Land and Water Reserve	LWR184	
Harms Flatwoods Nature Preserve	NP388	
Bobolink Meadow Land and Water Reserve	LWR185	
Shoe Factory Road Prairie Nature Preserve	NP010	
Cranberry Slough Nature Preserve	NP005	
Baker's Lake Nature Preserve	NP119	
Glenbrook North High School Prairie Nature Preserve	NP139	
Sand Ridge Nature Preserve	NP009	
Wolf Road Prairie Nature Preserve	NP164	
Black Partridge Woods Nature Preserve	NP002	
Paw Paw Woods Nature Preserve	NP007	
Old Plank Road Prairie Nature Preserve	NP264	
Santa Fe Prairie Nature Preserve	NP265	
Sundrop Prairie Nature Preserve	NP292	
Bluff Spring Fen Nature Preserve	NP146	
Superior Street Prairie Land and Water Reserve	LWR013	
Morton Grove Prairie Nature Preserve	NP073	
Spring Lake Nature Preserve	NP011	
Gensburg-Markham Prairie Nature Preserve	NP077	
Cap Sauers Holdings Nature Preserve	NP004	
Busse Forest Nature Preserve	NP003	
Somme Prairie Nature Preserve	NP122	
Dropseed Prairie Nature Preserve	NP287	
Sagawau Canyon Nature Preserve	NP121	
Chicago Ridge Prairie Nature Preserve	NP243	
Salt Creek Woods Nature Preserve	NP008	
Paintbrush Prairie Nature Preserve	NP281	
Jurgensen Woods North Nature Preserve	NP006	
Thorn Creek Woods Nature Preserve	NP066	
Kennicott's Grove Nature Preserve	NP263	
Markham Prairie - East Nature Preserve	NP357	

Illinois Nature Preserves Commission (INPC)

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<u>INPC Protected Areas</u>	<u>INPC Number</u>	
Deer Grove West Woodland and Wetland Nature Preserve	NP347	
McMahon Woods and Fen Nature Preserve	NP350	
Butterfield Creek Headwaters Land and Water Reserve	LWR117	
Helm Woods Nature Preserve	NP215	
Calumet City Prairie and Marsh Nature Preserve	NP341	
Powderhorn Prairie and Marsh Nature Preserve	NP338	
Orland Grassland Land and Water Reserve	LWR096	
Bartel Grassland Land and Water Reserve	LWR095	
Burnham Prairie Nature Preserve	NP314	
Thornton-Lansing Road Nature Preserve	NP012	
Palos Fen Nature Preserve	NP120	
Palatine Prairie Nature Preserve	NP254	
Total # of Areas in County		44
Crawford		
Emma Vance Woods Nature Preserve	NP333	
Carroll T. Cox Forest Natural Heritage Landmark		
Chauncey Marsh Land and Water Reserve	LWR158	
Edward V. Price Woods Land and Water Reserve	LWR135	
Total # of Areas in County		3
Cumberland		
The Wade/Cutright Farm Natural Heritage Landmark	NHL126	
John Clyde Spitler Woods Nature Preserve	NP382	
The Grissom Farm Natural Heritage Landmark	NHL127	
Sholem Farm Natural Heritage Landmark	NHL129	
Total # of Areas in County		4
De Witt		
Mettler Woods Nature Preserve	NP322	
Total # of Areas in County		1
DeKalb		
Wilkinson-Renwick Marsh Nature Preserve	NP229	
Total # of Areas in County		1
Douglas		
Upper Embarras Woods Nature Preserve	NP221	
Upper Embarras Woods Land and Water Reserve	LWR074	
Total # of Areas in County		2
DuPage		
Brewster Creek Marsh Nature Preserve	NP360	
Belmont Prairie Nature Preserve	NP075	
Tri-County Wetland Land and Water Reserve	LWR055	
St. John Lutheran Prairie Natural Heritage Landmark	NHL076	
Truitt-Hoff Nature Preserve	NP331	

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

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<u>INPC Protected Areas</u>	<u>INPC Number</u>	
Swift Prairie Nature Preserve	NP363	
Belleau Woods Land and Water Reserve	LWR170	
Des Plaines Riverway Nature Preserve	NP361	
Springbrook Prairie Nature Preserve	NP365	
Springbrook Marsh Land and Water Reserve	LWR171	
Churchill Prairie Nature Preserve	NP225	
Meacham Grove Nature Preserve	NP362	
Black Partridge Woods Nature Preserve	NP002	
Total # of Areas in County		13
Edgar		
Baber Woods Nature Preserve	NP049	
Miller's Rocky Branch Land and Water Reserve	LWR040	
Total # of Areas in County		2
Edwards		
Beadles Barrens Nature Preserve	NP293	
Total # of Areas in County		1
Effingham		
Wade Heiser Woods Natural Heritage Landmark	NHL156	
Lake Sara Flatwoods Natural Heritage Landmark	NHL125	
Rock Cave Land and Water Reserve	LWR075	
Rock Cave Nature Preserve	NP108	
Total # of Areas in County		4
Fayette		
Burnside Forest Nature Preserve	NP383	
Dean Hills Nature Preserve	NP127	
Ramsey Railroad Prairie Nature Preserve	NP266	
Horn Prairie Grove Land and Water Reserve	LWR151	
Total # of Areas in County		4
Ford		
Sibley Grove Nature Preserve	NP320	
Prospect Cemetery Prairie Nature Preserve	NP061	
Total # of Areas in County		2
Franklin		
Campbell Lake Land and Water Reserve	LWR143	
Total # of Areas in County		1
Fulton		
Diers Seep Spring Natural Heritage Landmark	NHL150	
Kedzior Woodlands Land and Water Reserve	LWR102	
Harper-Rector Woods Nature Preserve	NP174	

Illinois Nature Preserves Commission (INPC)

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April 2018

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<u>INPC Protected Areas</u>	<u>INPC Number</u>	
	Total # of Areas in County	3
Greene		
McMaster Woods Nature Preserve	NP211	
Providence Woods Natural Heritage Landmark	NHL048	
	Total # of Areas in County	2
Grundy		
Hildy Prairie South Natural Heritage Landmark	NHL004	
DuPont Hill Prairies Natural Heritage Landmark	NHL180	
Collins Station Prairie Land and Water Reserve	LWR180	
Hildy Prairie North Natural Heritage Landmark	NHL003	
Hildy Prairie Nature Preserve	NP353	
Short Pioneer Cemetery Prairie Nature Preserve	NP163	
Goose Lake Prairie Nature Preserve	NP021	
	Total # of Areas in County	7
Hamilton		
Karcher's Post Oak Woods Nature Preserve	NP291	
	Total # of Areas in County	1
Hancock		
Samuel Barnum Mead Savanna Nature Preserve	NP351	
Cedar Glen Land and Water Reserve	LWR111	
Stony Hills Nature Preserve	NP316	
Geissler Savanna Land and Water Reserve	LWR080	
Cedar Glen Nature Preserve	NP054	
Jamar Haven Land and Water Reserve	LWR039	
Allison Savanna Land and Water Reserve	LWR014	
Cecil White Prairie Land and Water Reserve	LWR076	
Mississippi River Sand-Hills Nature Preserve	NP041	
	Total # of Areas in County	9
Hardin		
Lafarge Barker Bluff Land and Water Reserve	LWR160	
Spivey's Bluff Natural Heritage Landmark	NHL103	
Collier Limestone Glade Nature Preserve	NP344	
Lafarge Limestone Glade Nature Preserve	NP352	
	Total # of Areas in County	4
Henderson		
Harry N. Patterson Savanna Land and Water Reserve	LWR152	
New Crystal Lake Club Natural Heritage Landmark	NHL035	
Eisenmayer Sand Prairie Natural Heritage Landmark	NHL069	
Tartan Bluff Hill Prairie Natural Heritage Landmark	NHL133	
Delabar - Pruett Hill Prairie Natural Heritage Landmark	NHL140	

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

Land Protection Programs:

LWR = Land and Water Reserve

NHL = Natural Heritage Landmark

NP = Nature Preserve

<u>INPC Protected Areas</u>	<u>INPC Number</u>	
	Total # of Areas in County	5
Henry		
Mineral Marsh Nature Preserve	NP283	
Greenlee Cemetery Prairie Nature Preserve	NP160	
Munson Township Cemetery Prairie Nature Preserve	NP112	
	Total # of Areas in County	3
Iroquois		
Bonnie's Prairie Nature Preserve	NP218	
Hooper Branch Savanna Nature Preserve	NP141	
Iroquois Sands Land and Water Reserve	LWR136	
Kankakee, Beaverville, & Southern Railroad Prairie Natural H	NHL132	
Iroquois County State Wildlife Area Land and Water Reserve	LWR053	
Loda Cemetery Prairie Nature Preserve	NP107	
	Total # of Areas in County	6
Jackson		
Stonewood Farm Land and Water Reserve	LWR159	
Rattlesnake Creek Natural Heritage Landmark	NHL195	
Lake Murphysboro Hill Prairies Land and Water Reserve	LWR114	
Circle B Ranch Land and Water Reserve	LWR129	
Piney Creek Ravine Nature Preserve	NP065	
Faulkner-Franke Pioneer Railroad Prairie Nature Preserve	NP259	
Degognia Canyon Land and Water Reserve	LWR130	
Campbell Lake Land and Water Reserve	LWR143	
Lovets Pond Nature Preserve	NP324	
Campbell Lake Natural Heritage Landmark	NHL109	
Fern Rocks Nature Preserve	NP047	
	Total # of Areas in County	11
Jasper		
Ira Huddlestun Woods-Leon Tract Natural Heritage Landmark	NHL007	
Huddlestun Woods Natural Heritage Landmark	NHL167	
Prairie Ridge State Natural Area Land and Water Reserve	LWR041	
Green Prairie Natural Heritage Landmark	NHL144	
Ira Huddlestun Woods-Denzel Tract Natural Heritage Landmar	NHL006	
Prairie Ridge Land and Water Reserve	LWR044	
Robert Ridgway Grasslands Nature Preserve	NP306	
Richard R. and Jean W. Graber Grasslands Land and Water Re	LWR082	
Jasper County Prairie Chicken Sanctuary Nature Preserve	NP038	
	Total # of Areas in County	9
Jersey		
Katelyn's Woods Land and Water Reserve	LWR059	
McAdams Peak Land and Water Reserve	LWR121	
Palisades Nature Preserve	NP342	

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

Land Protection Programs:

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<u>INPC Protected Areas</u>	<u>INPC Number</u>	
Brainerd Cave Land and Water Reserve	LWR010	
Pere Marquette Nature Preserve	NP074	
Principia Hill Prairies - East Natural Heritage Landmark	NHL081	
Principia Hill Prairies - West Natural Heritage Landmark	NHL082	
Total # of Areas in County		7
Jo Daviess		
Gramerey Park Natural Heritage Landmark	NHL201	
Apple River Canyon Nature Preserve	NP307	
Tapley Woods Land and Water Reserve	LWR035	
Ward's Grove Nature Preserve	NP151	
Keough Effigy Mounds Land and Water Reserve	LWR150	
Eagles Nest Land and Water Reserve	LWR165	
Asgard Natural Heritage Landmark	NHL014	
Hanover Bluff Nature Preserve	NP150	
Princess Mine Algific Slopes Natural Heritage Landmark	NHL088	
Rall Woods Land and Water Reserve	LWR153	
Hanover Bluff Land and Water Reserve	LWR110	
Hanover Forest Land and Water Reserve	LWR103	
Casper Bluff Land and Water Reserve	LWR148	
Rice Algific Slope Natural Heritage Landmark	NHL207	
Apple River Canyon Land and Water Reserve	LWR081	
Wapello Land and Water Reserve	LWR131	
Total # of Areas in County		16
Johnson		
Deer Pond Nature Preserve	NP256	
Happy Hollow Acres Natural Heritage Landmark	NHL105	
Cache River Land and Water Reserve	LWR024	
Heron Pond-Little Black Slough Nature Preserve	NP034	
Grassy Slough Land and Water Reserve	LWR089	
Round Bluff Nature Preserve	NP048	
Cypress Pond Land and Water Reserve	LWR025	
Stoneside Natural Heritage Landmark	NHL139	
Cedar/Draper's Bluff Land and Water Reserve	LWR023	
Cave Creek Glade Nature Preserve	NP104	
Section 8 Woods Nature Preserve	NP186	
Wise Ridge Land and Water Reserve	LWR166	
Total # of Areas in County		12
Kane		
Johnson's Mound Nature Preserve	NP206	
Freeman Road and Powers Road Fen and Woods Natural Heri	NHL194	
Trout Park Nature Preserve	NP042	
Ferson's Creek Nature Preserve	NP196	
Bliss Woods Nature Preserve	NP247	
Freeman Kame Nature Preserve	NP237	

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

Land Protection Programs:

LWR = Land and Water Reserve

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INPC Protected Areas

INPC Number

Trout Park River's Edge Land and Water Reserve	LWR183
Tri-County Wetland Land and Water Reserve	LWR055
Campton Hills Park Land and Water Reserve	LWR107
Norris Nature Preserve	NP068
Burlington Prairie Nature Preserve	NP228
Almon Underwood Prairie Nature Preserve	NP253
Fox River Fen Nature Preserve	NP209
Kemper Park Nature Preserve	NP222
Fox River Forested Fen Nature Preserve	NP376
Dixie Briggs Fromm Prairie Nature Preserve	NP317
LeRoy Oakes Nature Preserve	NP207
Helm Woods Nature Preserve	NP215
Del Webb Sedge Meadow and Grove Nature Preserve	NP345
Shaw Fen and Woods Natural Heritage Landmark	NHL158
Sleepy Hollow Ravine Nature Preserve	NP275
Nelson Lake Marsh Nature Preserve	NP080
Bluff Spring Fen Nature Preserve	NP146
Brewster Creek Fen Nature Preserve	NP262
Meissner-Corron Prairie and Sedge Meadow Nature Preserve	NP384

Total # of Areas in County

25

Kankakee

Hopkins Park Savanna Nature Preserve	NP373
Mskoda Land and Water Reserve	LWR104
Callie Mae Spraggins Savanna Nature Preserve	NP369
Bourbonnais Geological Area Nature Preserve	NP260
Sweet Fern Savanna Land and Water Reserve	LWR060
Momence Wetlands Nature Preserve	NP165
Tallmadge Sand Forest Land and Water Reserve	LWR105
Iroquois Sands Land and Water Reserve	LWR136
Momence Wetlands Land and Water Reserve	LWR017
Carl N. Becker Savanna Nature Preserve	NP346
Gooseberry Island Nature Preserve	NP175
Kankakee River Nature Preserve	NP015
Aroma Forest Preserve Land and Water Reserve	LWR015
Iroquois Woods Nature Preserve	NP220
Pembroke Savanna Nature Preserve	NP327

Total # of Areas in County

15

Kendall

Yorkville Prairie South Natural Heritage Landmark	NHL134
Maramech Woods Nature Preserve	NP155
Silver Springs Railroad Prairie Natural Heritage Landmark	NHL147
Millington Railroad Fen Natural Heritage Landmark	NHL146
Yorkville Railroad Prairie Natural Heritage Landmark	NHL148
Yorkville Prairie Nature Preserve	NP251
Dickson Sedge Meadow Natural Heritage Landmark	NHL111

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

Land Protection Programs:

LWR = Land and Water Reserve

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NP = Nature Preserve

<u>INPC Protected Areas</u>	<u>INPC Number</u>	
Tucker-Millington Fen Nature Preserve	NP212	
Millhurst Fen Nature Preserve	NP297	
Emmons' Woods Land and Water Reserve	LWR009	
Total # of Areas in County		10
Kenosha		
Brooklands Wood Land and Water Reserve	LWR032	
Webber Wildlife Refuge Land and Water Reserve	LWR033	
Spring Bluff Nature Preserve	NP213	
Red Wing Slough / Deer Lake Land and Water Reserve	LWR018	
Total # of Areas in County		4
Knox		
Forever Fields Land and Water Reserve	LWR175	
Knox Prairie Natural Heritage Landmark	NHL166	
Haw Creek Sedge Meadow Land and Water Reserve	LWR077	
Total # of Areas in County		3
La Salle		
Maze Woods Land and Water Reserve	LWR030	
Matthiessen Dells Nature Preserve	NP202	
Pecumsaugan Creek/Blackball Mines Nature Preserve	NP124	
Voight Pauper Cemetery Prairie Land and Water Reserve	LWR007	
Lower Fox River-Wedron Palisades Nature Preserve	NP282	
Lower Fox River-Blake's Landing Nature Preserve	NP288	
Dayton Bluffs Land and Water Reserve	LWR174	
Catlin Salt Marsh Natural Heritage Landmark	NHL023	
Starved Rock Nature Preserve	NP018	
Mitchell's Grove Nature Preserve	NP272	
Margery C. Carlson Nature Preserve	NP060	
Plum Island Natural Heritage Landmark	NHL192	
Camp River Trails Land and Water Reserve	LWR091	
Sandy Ford Land and Water Reserve	LWR022	
Total # of Areas in County		14
Lake		
Wagner Fen Nature Preserve	NP242	
MacArthur Woods Nature Preserve	NP082	
Barrington Bog Nature Preserve	NP158	
Illinois Beach Nature Preserve	NP001	
Almond Marsh Nature Preserve	NP195	
Lyons Prairie and Marsh Nature Preserve	NP091	
Pistakee Bog Nature Preserve	NP056	
Wadsworth Prairie Nature Preserve	NP083	
Gavin Bog and Prairie Nature Preserve	NP088	
Elm Road Woods Nature Preserve	NP354	
Sun Lake Nature Preserve	NP372	

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

Land Protection Programs:

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INPC Protected Areas

INPC Number

Florsheim Park Nature Preserve	NP258
Farm Trails North Nature Preserve	NP233
Lloyd's Woods Nature Preserve	NP099
Rhyan Tract Land and Water Reserve	LWR063
Cedar Lake Bog Nature Preserve	NP057
Turner Lake Fen Nature Preserve	NP167
Hybernia Nature Preserve	NP197
Highmoor Park Nature Preserve	NP203
Reed-Turner Woodland Nature Preserve	NP079
Oak Openings Nature Preserve	NP194
Fourth Lake Fen Nature Preserve	NP302
Middlefork Savanna Nature Preserve	NP309
Spring Bluff Nature Preserve	NP213
Liberty Prairie Nature Preserve	NP193
North Dunes Nature Preserve	NP166
Webber Wildlife Refuge Land and Water Reserve	LWR033
Brooklands Wood Land and Water Reserve	LWR032
Volo Bog Nature Preserve	NP025
Edward L. Ryerson Nature Preserve	NP040
Openlands Lakeshore, Bluff and Ravine Nature Preserve	NP370
Lyons Prairie and Woods Nature Preserve	NP303
Red Wing Slough / Deer Lake Land and Water Reserve	LWR018
Wauconda Bog Nature Preserve	NP026
Eastern Prairie Fringed Orchid Nature Preserve	NP257
McLean Woods and Wetlands Nature Preserve	NP364
Dokum Mskoda Sedge Meadow Nature Preserve	NP358
Skokie River Nature Preserve	NP216
Tower Lakes Fen Nature Preserve	NP248
Jean Farwell Woods Land and Water Reserve	LWR134
Black-Crown Marsh Land and Water Reserve	LWR058
Berkeley Prairie Nature Preserve	NP380
Rollins Savanna Nature Preserve	NP371
Grainger Woods Nature Preserve	NP348
Skokie River Prairie Land and Water Reserve	LWR161
Cuba Marsh Land and Water Reserve	LWR162
Kildeer Creek and Woodland Land and Water Reserve	LWR154

Total # of Areas in County

47

Lawrence

Red Hills Seep Springs Land and Water Reserve	LWR011
Chauncey Marsh Land and Water Reserve	LWR158
Robeson Hills Nature Preserve	NP037
Chauncey Marsh Nature Preserve	NP105
Red Hills Woods Nature Preserve	NP132
Robeson Hills Land and Water Reserve	LWR005
Carroll T. Cox Forest Natural Heritage Landmark	

Total # of Areas in County

6

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

Land Protection Programs:

LWR = Land and Water Reserve

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NP = Nature Preserve

<u>INPC Protected Areas</u>	<u>INPC Number</u>	
Lee		
Lowell Forest Nature Preserve	NP340	
Hazelwood Forest Nature Preserve	NP339	
Pinecliff Natural Heritage Landmark	NHL108	
Quiet Acres Prairie Natural Heritage Landmark	NHL086	
Temperance Hill Cemetery Prairie Nature Preserve	NP111	
Amboy Marsh Wildlife Sanctuary Nature Preserve	NP385	
Foley Sand Prairie Nature Preserve	NP162	
Franklin Creek Nature Preserve	NP024	
Nachusa Grasslands Nature Preserve	NP366	
Earl and Olive Bothe Prairie Natural Heritage Landmark	NHL090	
L & M Prairie Natural Heritage Landmark	NHL071	
Ryan Wetland and Sand Prairie Land and Water Reserve	LWR137	
Bartlett Woods Nature Preserve	NP153	
Total # of Areas in County		13
Livingston		
Sunbury Railroad Prairie Nature Preserve	NP106	
English Prairie Natural Heritage Landmark	NHL062	
Total # of Areas in County		2
Logan		
North Elkhart Hill Grove Land and Water Reserve	LWR123	
Elkhart Hill Grove Land and Water Reserve	LWR069	
Elkhart Hill Grove Nature Preserve	NP308	
Sandra Miller Bellrose Nature Preserve	NP310	
Total # of Areas in County		4
Macon		
Calamus Lake Nature Preserve	NP208	
Spitler Woods Nature Preserve	NP089	
Bois du Sangamon Nature Preserve	NP078	
Elwin Wild Hyacinth Site Natural Heritage Landmark	NHL118	
Rock Springs Land and Water Reserve	LWR187	
Total # of Areas in County		5
Macoupin		
Gillespie Prairie Land and Water Reserve	LWR012	
Goode's Woods Nature Preserve	NP268	
Roderick Prairie Nature Preserve	NP295	
King Forest Nature Preserve	NP319	
Culp Conservancy Woods Land and Water Reserve	LWR142	
Denby Prairie Nature Preserve	NP147	
Bullard Lake Club Natural Heritage Landmark	NHL025	
Total # of Areas in County		7

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

Land Protection Programs:

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<u>INPC Protected Areas</u>	<u>INPC Number</u>	
Madison		
E. Dora Bohm Memorial Nature Preserve	NP252	
Mississippi Sanctuary Nature Preserve	NP236	
Poag Railroad Prairie Natural Heritage Landmark	NHL174	
Bohm Woods Nature Preserve	NP334	
Missionary Oblates' Woods Nature Preserve	NP234	
John M. Olin Nature Preserve	NP192	
William and Emma Bohm Memorial Nature Preserve	NP087	
Total # of Areas in County		7
Marion		
Prairie Ridge Land and Water Reserve	LWR045	
Karl Bartel Wildlife Sanctuary Land and Water Reserve	LWR061	
Miller Shrub Swamp Nature Preserve	NP184	
Marion County Prairie Chicken Sanctuary Nature Preserve	NP039	
Prairie Ridge State Natural Area Land and Water Reserve	LWR042	
Loy Prairie Land and Water Reserve	LWR169	
Total # of Areas in County		6
Marshall		
Sandy Creek Bluffs Land and Water Reserve	LWR083	
Leigh Woods Natural Heritage Landmark	NHL152	
Hopewell Hill Prairies Nature Preserve	NP276	
Oak Bluff Savanna Nature Preserve	NP312	
Wier Hill Prairie Nature Preserve	NP109	
Fern Ridge Nature Preserve	NP386	
Marshall County Hill Prairies Land and Water Reserve	LWR029	
Bill and Mike's Prairie Natural Heritage Landmark	NHL149	
Total # of Areas in County		8
Mason		
Tomlin Timber Nature Preserve	NP154	
Speckman-Stelter Woods Land and Water Reserve	LWR046	
Barkhausen Woods Land and Water Reserve	LWR057	
Henry Allan Gleason Nature Preserve	NP029	
Matanzas Prairie Nature Preserve	NP131	
Bob Spanski's Walden Too Land and Water Reserve	LWR001	
Barton-Sommer Woodland Nature Preserve	NP246	
Walden West Land and Water Reserve	LWR106	
Bath Lake Springs Natural Heritage Landmark	NHL143	
Revis Spring Hill Prairie Nature Preserve	NP045	
Speckman - Stelter Woods Natural Heritage Landmark	NHL053	
Sparks Pond Land and Water Reserve	LWR004	
Lucas Woods Natural Heritage Landmark	NHL153	
Sand Prairie-Scrub Oak Nature Preserve	NP022	
Long Branch Sand Prairie Nature Preserve	NP176	

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

Land Protection Programs:

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NP = Nature Preserve

<u>INPC Protected Areas</u>	<u>INPC Number</u>	
	Total # of Areas in County	15
Massac		
Grassy Slough Land and Water Reserve	LWR089	
Cretaceous Hills Nature Preserve	NP031	
Halesia Nature Preserve	NP055	
Horsefly Ridge Nature Preserve	NP343	
Mermet Lake Flatwoods Land and Water Reserve	LWR019	
Sielbeck Forest Land and Water Reserve	LWR037	
Mermet Swamp Nature Preserve	NP020	
Massac Forest Nature Preserve	NP084	
Fort Massac Land and Water Reserve	LWR062	
	Total # of Areas in County	9
Mcdonough		
Argyle Hollow Barrens Nature Preserve	NP224	
Grigsby Marsh Land and Water Reserve	LWR020	
Nenawakwa Land and Water Reserve	LWR047	
Short Fork Seep Nature Preserve	NP321	
Thistle Hills Land and Water Reserve	LWR006	
	Total # of Areas in County	5
Mchenry		
Yonder Prairie Nature Preserve	NP349	
Halo Hill Tree Farm & Artists Retreat Land and Water Re	LWR155	
Bates Fen Nature Preserve	NP244	
Cary Junior High Prairie Nature Preserve	NP090	
Sterne's Fen Nature Preserve	NP240	
Wheeler Fen Land and Water Reserve	LWR016	
Maunk-Sook Sedge Meadow and Savanna Land and Water Re	LWR124	
Carl & Claire Marie Sands/Main Street Prairie Nature Pre	NP201	
Goose Lake Marsh Land and Water Reserve	LWR090	
Fel-Pro Triple R Fen Nature Preserve	NP318	
Queen Anne Prairie-Eckert Cemetery Natural Heritage Landma	NHL065	
Del Webb Sedge Meadow and Grove Nature Preserve	NP345	
Weingart Road Sedge Meadow Nature Preserve	NP129	
Kettle Moraine Nature Preserve	NP051	
Black-Crown Marsh Land and Water Reserve	LWR058	
Boloria Fen and Sedge Meadow Nature Preserve	NP325	
Cary Country Club Prairie Natural Heritage Landmark	NHL094	
Spring Grove Fen Nature Preserve	NP168	
Lyons Prairie and Marsh Nature Preserve	NP091	
Pistakee Bog Nature Preserve	NP056	
Barber Fen Nature Preserve	NP198	
Boger Bog Nature Preserve	NP355	
Wingate Prairie Nature Preserve	NP241	
Route 47 Balsam Poplar Site Natural Heritage Landmark	NHL093	

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

Land Protection Programs:

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<u>INPC Protected Areas</u>	<u>INPC Number</u>	
MacBrough Marsh Land and Water Reserve	LWR070	
Slough Creek Fen Nature Preserve	NP367	
Lind Forest Nature Preserve	NP249	
Boone Creek Fen Nature Preserve	NP267	
Lake in the Hills Fen Nature Preserve	NP185	
Amberin Ash Ridge Nature Preserve	NP313	
Gladstone Fen Nature Preserve	NP204	
Exner Marsh Nature Preserve	NP235	
Bystricky Prairie Nature Preserve	NP157	
Kishwaukee Fen Nature Preserve	NP223	
Glacial Park Nature Preserve	NP214	
Spring Lake Nature Preserve	NP011	
Elizabeth Lake Nature Preserve	NP128	
Julia M. & Royce L. Parker Fen Nature Preserve	NP135	
Oakwood Hills Fen Nature Preserve	NP138	
Cotton Creek Marsh Nature Preserve	NP098	
Total # of Areas in County		40
McLean		
Thaddeus Stubblefield Grove Nature Preserve	NP232	
Merwin Savanna Nature Preserve	NP335	
Mackinaw River Land and Water Reserve	LWR141	
Funks Grove Land and Water Reserve	LWR145	
Funks Grove Nature Preserve	NP136	
Weston Cemetery Prairie Nature Preserve	NP035	
Stubblefield Woodlots Nature Preserve	NP156	
Sugar Grove Foundation - Funks Grove Natural Heritage Landm	NHL209	
Total # of Areas in County		8
Menard		
Witter's Bobtown Hill Prairie Nature Preserve	NP144	
Barton-Sommer Woodland Nature Preserve	NP246	
Baughner Hill Prairie Natural Heritage Landmark	NHL188	
Total # of Areas in County		3
Mercer		
Brownlee Cemetery Prairie Nature Preserve	NP092	
Total # of Areas in County		1
Monroe		
Brickey-Gonterman Memorial Hill Prairie Nature Preserve	NP277	
Stormont Hauss Nature Preserve	NP304	
Harry's Prairie Natural Heritage Landmark	NHL185	
Fults Hill Prairie Nature Preserve	NP030	
Brickey-Gonterman at Renault Bluffs Land and Water Reserve	LWR139	
Angela's Prairie Land and Water Reserve	LWR138	
Martha and Michelle Prairies Land and Water Reserve	LWR126	

Illinois Nature Preserves Commission (INPC)

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<u>INPC Protected Areas</u>	<u>INPC Number</u>	
Angela's Prairie Natural Heritage Landmark	NHL190	
Potato Hill Natural Heritage Landmark	NHL169	
White Rock Land and Water Reserve	LWR163	
Horse Creek Glade Natural Heritage Landmark	NHL181	
Paul Wightman Subterranean Nature Preserve	NP381	
Illinois Ozarks Nature Preserve	NP377	
White Rock Nature Preserve	NP356	
Salt Lick Point Land and Water Reserve	LWR118	
Armin Krueger Speleological Nature Preserve	NP189	
Pautler Nature Preserve	NP299	
William A. DeMint Memorial Hill Prairie Nature Preserve	NP294	
Fogelpole Cave Nature Preserve	NP177	
Luella Schaefer Memorial Hill Prairies Land and Water Reserv	LWR049	
Total # of Areas in County		20
Montgomery		
Gillespie Prairie Land and Water Reserve	LWR012	
Roberts Cemetery Savanna Nature Preserve	NP152	
Total # of Areas in County		2
Morgan		
Newman Cemetery Savanna Natural Heritage Landmark	NHL114	
Meredosia Hill Prairie Nature Preserve	NP143	
Total # of Areas in County		2
Ogle		
Beach Cemetery Prairie Nature Preserve	NP044	
Edward F. Vasallo Land and Water Reserve	LWR177	
Heeren Prairie Nature Preserve	NP255	
Stronghold Hill Prairie Natural Heritage Landmark	NHL044	
White Pines Forest Nature Preserve	NP300	
Byron Dragway Prairie Natural Heritage Landmark	NHL038	
Jarrett Prairie Nature Preserve	NP219	
Douglas E. Wade Prairie Nature Preserve	NP086	
George B. Fell Nature Preserve	NP043	
Piros Prairie Nature Preserve	NP273	
Howard D. Colman Dells Nature Preserve	NP279	
Devil's Backbone Natural Heritage Landmark	NHL017	
Kyte River Bottoms Land and Water Reserve	LWR108	
Nachusa Grasslands Nature Preserve	NP366	
Pine Rock Nature Preserve	NP016	
Total # of Areas in County		15
Peoria		
Forest Park South Nature Preserve	NP169	
St. Mary's Cemetery Hill Prairie Natural Heritage Landmark	NHL187	
Jubilee College Forest Nature Preserve	NP148	

Illinois Nature Preserves Commission (INPC)

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<u>INPC Protected Areas</u>	<u>INPC Number</u>	
Mary Taylor's Mossville Road Hill Prairie Natural Heritage L	NHL208	
Forest Park Nature Preserve	NP013	
Robinson Park Hill Prairies Nature Preserve	NP170	
Root Cemetery Savanna Nature Preserve	NP238	
Singing Woods Nature Preserve	NP298	
Brimfield Railroad Restoration Prairie Nature Preserve	NP305	
Springdale Cemetery Savanna Natural Heritage Landmark	NHL193	
Rock Island Trail Prairie Nature Preserve	NP226	
Detweiller Woods Nature Preserve	NP230	
Total # of Areas in County		12
Perry		
Campbell Lake Land and Water Reserve	LWR143	
Total # of Areas in County		1
Piatt		
Hog Chute Crossing Natural Heritage Landmark	NHL155	
Shady Rest Land and Water Reserve	NP133	
Jasmine Hollow Land and Water Reserve	NP132	
Upper Sangamon River Land and Water Reserve	LWR093	
Monticello's Sangamon River Land and Water Reserve	LWR127	
Jasmine Hollow Natural Heritage Landmark	NHL132	
Total # of Areas in County		6
Pike		
Pilot Knob Limestone Glade Natural Heritage Landmark	NHL077	
Grubb Hollow Prairie Nature Preserve	NP182	
Big Britches Natural Heritage Landmark	NHL050	
Twin Culvert Cave Nature Preserve	NP285	
McFarland Hill Land and Water Reserve	LWR164	
Total # of Areas in County		5
Pope		
Susan's Glade Natural Heritage Landmark	NHL075	
Culley Barrens Land and Water Reserve	LWR112	
Bennet Hills - Robbs Tract Natural Heritage Landmark	NHL084	
Big Grand Pierre Land and Water Reserve	LWR147	
Spivey's Valley Glade Nature Preserve	NP274	
Round Pond Nature Preserve	NP378	
Round Pond - Harris Tract Natural Heritage Landmark	NHL064	
Lusk Creek Canyon Nature Preserve	NP032	
Gibbons Creek Barrens Land and Water Reserve	LWR172	
Cretaceous Hills Nature Preserve	NP031	
Total # of Areas in County		10
Pulaski		
Cache River Land and Water Reserve	LWR024	

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<u>INPC Protected Areas</u>	<u>INPC Number</u>	
Grassy Slough Land and Water Reserve	LWR089	
Hartman Spring Nature Preserve	NP359	
Section 8 Woods Nature Preserve	NP186	
Buttonland Swamp Diehl Property Natural Heritage Landmark	NHL079	
Chestnut Hills Nature Preserve	NP058	
Total # of Areas in County		6
Putnam		
George S. Park Memorial Woods Nature Preserve	NP017	
Thomas W. and Elizabeth Moews Dore Seep Nature Preserve	NP311	
Miller-Anderson Woods Nature Preserve	NP023	
Mt. Palatine Cemetery Prairie Nature Preserve	NP210	
Total # of Areas in County		4
Randolph		
Degognia Canyon Land and Water Reserve	LWR130	
Prairie of the Rock Overlook Land and Water Reserve	LWR119	
Prairie of the Rock Nature Preserve	NP323	
Blufftop Acres Land and Water Reserve	LWR113	
Rockcastle Creek Nature Preserve	NP389	
Piney Creek Ravine Nature Preserve	NP065	
Swayne Hollow Nature Preserve	NP332	
Total # of Areas in County		7
Richland		
Big Creek Woods Memorial Nature Preserve	NP027	
Total # of Areas in County		1
Rock		
Sugar River Alder Nature Preserve	NP239	
Total # of Areas in County		1
Rock Island		
Josua Lindahl Hill Prairies Nature Preserve	NP337	
Black Hawk Forest Nature Preserve	NP125	
Elton E. Fawks Bald Eagle Refuge Nature Preserve	NP183	
Total # of Areas in County		3
Saline		
P & E Refuge Land and Water Reserve	LWR052	
Pruett Woods Nature Preserve	NP368	
Horseshoe Geological Area Land and Water Reserve	LWR008	
Sally Hollow Natural Heritage Landmark	NHL080	
Total # of Areas in County		4
Sangamon		

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

Land Protection Programs:

LWR = Land and Water Reserve

NHL = Natural Heritage Landmark

NP = Nature Preserve

INPC Protected Areas

INPC Number

Kevin and Linda Cox's Cory Woods Natural Heritage Landmar
Orlandini's South Fork of the Sangamon River Natural Heritag
Carpenter Park Nature Preserve

NHL196
NHL???
NP069

Total # of Areas in County 3

Schuyler

Williams Creek Bluff Land and Water Reserve

LWR109

Total # of Areas in County 1

Shelby

Margaret Guzy Pothole Wetlands Land and Water Reserve

LWR036

Total # of Areas in County 1

St. Clair

Stemler Cave Woods Nature Preserve
Four Our Future Natural Heritage Landmark
Columbia Quarry - Dupo Prairie Land and Water Reserve
Julius J. Knobeloch Woods Nature Preserve
Stemler Cave Nature Preserve
Sugar Loaf Mound Natural Heritage Landmark
Marissa Woods Nature Preserve
DesPain Wetlands Land and Water Reserve
Peaceful Acres Natural Heritage Landmark
Pruitt Sinkholes Nature Preserve
Columbia Quarry - Sugar Loaf Prairie Land and Water Reserve
A Quiet Place Natural Heritage Landmark
Wagon Lake Land and Water Reserve
New Athens Woods Land and Water Reserve
Sinking Creek Nature Preserve
Jackson Slough Woods Land and Water Reserve
Harry's Hideaway Natural Heritage Landmark

NP140
NHL191
LWR078
NP101
NP270
NHL112
NP102
LWR026
NHL045
NP269
LWR079
NHL145
LWR115
LWR101
NP328
LWR094
NHL022

Total # of Areas in County 17

Stark

Harper's Woods Nature Preserve

NP100

Total # of Areas in County 1

Stephenson

Wirth Prairie Nature Preserve
Freeport Prairie Nature Preserve

NP116
NP064

Total # of Areas in County 2

Tazewell

Hinkle Prairie Natural Heritage Landmark
Independence Park Woods Land and Water Reserve
Curtis Woods Natural Heritage Landmark
Bennett's Terraqueous Gardens Nature Preserve

NHL033
LWR167
NHL052
NP190

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

Land Protection Programs:

LWR = Land and Water Reserve

NHL = Natural Heritage Landmark

NP = Nature Preserve

INPC Protected Areas

INPC Number

Parklands Nature Preserve	NP187
Coon Hill Prairie Natural Heritage Landmark	NHL173
McCoy Woods Natural Heritage Landmark	NHL060
Manito Prairie Nature Preserve	NP137
Cooper Park Wetlands Land and Water Reserve	LWR064
Mehl's Bluff Nature Preserve	NP171
Caterpillar Hill Prairie Natural Heritage Landmark	NHL203
McCoy Woods Nature Preserve	NP315
Dirksen - McNaughton Woods Land and Water Reserve	LWR097
Crevecoeur Nature Preserve	NP085
Fon du Lac Seep Nature Preserve	NP374
Fon du Lac Seep Land and Water Reserve	LWR073

Total # of Areas in County

16

Union

Guthrie Cave Land and Water Reserve	LWR038
Berryville Shale Glade Nature Preserve	NP178
LaRue Swamp Nature Preserve	NP173
Cypress Pond Land and Water Reserve	LWR025
Cedar/Draper's Bluff Land and Water Reserve	LWR023
Brown Barrens Nature Preserve	NP179
McClure Shale Glade Nature Preserve	NP180
Ren-Dill Shale Glade Nature Preserve	NP301
Mina Gurley Crawford Woods Natural Heritage Landmark	NHL106
Ozark Hills Nature Preserve	NP052

Total # of Areas in County

10

Vermilion

Jordan Creek of the North Fork Nature Preserve	NP289
Kickapoo Woods Land and Water Reserve	LWR179
Windfall Prairie Nature Preserve	NP072
Russell M. Duffin Nature Preserve	NP033
Little Vermilion River Land and Water Reserve	LWR021
Orchid Hill Natural Heritage Landmark	NHL107
Carl Flierman's River Nature Preserve	NP191
Middle Fork Woods Nature Preserve	NP071
Edgewood Farm Land and Water Reserve	LWR050
Horseshoe Bottom Nature Preserve	NP070
Doris Westfall Prairie Restoration Nature Preserve	NP278
Fairchild Cemetery Prairie/Savanna Nature Preserve	NP142
Forest Glen Seep Nature Preserve	NP113
Jordan Creek of the Salt Fork Natural Heritage Landmark	NHL???
Kinney's Ford Seep Land and Water Reserve	LWR086
East Conkeytown Natural Heritage Landmark	NHL204
Larimore's Salt Fork of Vermilion River Land and Water Rese	LWR146
Larimore 40 Natural Heritage Landmark	NHL205
R.W. Larimore's Salt Fork River Natural Heritage Landmark	NHL206

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

Land Protection Programs:

LWR = Land and Water Reserve

NHL = Natural Heritage Landmark

NP = Nature Preserve

<u>INPC Protected Areas</u>	<u>INPC Number</u>	
Howard's Hollow Seep Nature Preserve	NP199	
Kickapoo Hill Prairie Land and Water Reserve	LWR178	
Collie - Flower Acres Natural Heritage Landmark	NHL179	
Total # of Areas in County		22
Wabash		
Beall Woods Land and Water Reserve	LWR071	
Marjorie J. Brines White Oak Woods Land and Water Reserve	LWR028	
Beall Woods Nature Preserve	NP014	
Total # of Areas in County		3
Warren		
Massasauga Prairie Nature Preserve	NP114	
Spring Grove Cemetery Prairie Nature Preserve	NP115	
Total # of Areas in County		2
Washington		
Marilandica Acres Land and Water Reserve	LWR067	
Marilandica Acres Natural Heritage Landmark	NHL183	
Chip-O-Will Land and Water Reserve	LWR056	
Nature's Way Natural Heritage Landmark	NHL136	
Serendipity Acres Natural Heritage Landmark	NHL184	
Bohbrink Woods Nature Preserve	NP375	
Buck Hill Bottom Land and Water Reserve	LWR144	
Wieland Woods Land and Water Reserve	LWR140	
Sipple Slough Woods Land and Water Reserve	LWR087	
Recker Woods Natural Heritage Landmark	NHL019	
Posen Woods Nature Preserve	NP059	
Total # of Areas in County		11
Wayne		
Dry Fork Woods Natural Heritage Landmark	NHL130	
Padgett Pin Oak Woods Land and Water Reserve	LWR048	
Total # of Areas in County		2
Whiteside		
Thomson-Fulton Sand Prairie Nature Preserve	NP028	
Thomson - Fulton Railroad Prairie Natural Heritage Landmark	NHL162	
Hahnman Sand Prairie Nature Preserve	NP379	
Wheelock Railroad Prairie Natural Heritage Landmark	NHL163	
Lyndon Prairie Nature Preserve	NP250	
Prairie Trails Natural Heritage Landmark	NHL009	
Total # of Areas in County		6
Will		
Kankakee River Nature Preserve	NP015	
Theodore Marsh Land and Water Reserve	LWR100	

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

Land Protection Programs:

LWR = Land and Water Reserve

NHL = Natural Heritage Landmark

NP = Nature Preserve

INPC Protected Areas

INPC Number

Des Plaines Dolomite Prairies Land and Water Reserve	LWR065
Messenger Woods Nature Preserve	NP245
Raccoon Grove Nature Preserve	NP172
Grant Creek Prairie Nature Preserve	NP067
Sand Ridge Savanna Nature Preserve	NP231
O'Hara Woods Nature Preserve	NP093
Braidwood Dunes and Savanna Nature Preserve	NP081
Hickory Creek Barrens Nature Preserve	NP271
Pilcher Park Land and Water Reserve	LWR188
Long Run Seep Nature Preserve	NP188
Lake Renwick Heron Rookery Nature Preserve	NP217
Wilmington Shrub Prairie Nature Preserve	NP181
Vermont Cemetery Prairie Nature Preserve	NP284
Romeoville Prairie Nature Preserve	NP126
Hitts Siding Prairie Nature Preserve	NP280
Thorn Creek Woods Nature Preserve	NP066
Lockport Prairie Nature Preserve	NP110
Goodenow Grove Nature Preserve	NP261
Lake Renwick East Land and Water Reserve	LWR098
Rock Run Land and Water Reserve	LWR099
Dellwood Park West Nature Preserve	NP336

Total # of Areas in County 23

Williamson

Otey-Grisley Forest Nature Preserve	NP387
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Total # of Areas in County 1

Winnebago

Johns Mound Group Land and Water Reserve	LWR173
Wilson Prairie Nature Preserve	NP205
Howard D. Colman Dells Nature Preserve	NP279
Pecatonica Bottoms Nature Preserve	NP096
Severson Dells Nature Preserve	NP097
Laona Heights Nature Preserve	NP095
Stone Bridge Reserve Land and Water Reserve	LWR002
Winkquist Prairie Natural Heritage Landmark	NHL012
Sugar River Preserve Natural Heritage Landmark	NHL016
Rockton Bog Nature Preserve	NP036
Harlem Hills Nature Preserve	NP046
Plum Grove Nature Preserve	NP149
Hartley Memorial Nature Preserve	NP094
Searls Park Prairie Nature Preserve	NP117
Colored Sands Bluff Nature Preserve	NP062
Schafman Prairie Natural Heritage Landmark	NHL142
Sugar River Alder Nature Preserve	NP239
Butternut Acres Natural Heritage Landmark	NHL002
Silver Creek Prairie Natural Heritage Landmark	NHL091

Illinois Nature Preserves Commission (INPC)

Protected Areas in Illinois by County

April 2018

Land Protection Programs:

LWR = Land and Water Reserve

NHL = Natural Heritage Landmark

NP = Nature Preserve

<u>INPC Protected Areas</u>	<u>INPC Number</u>	
	Total # of Areas in County	19
Woodford		
Wiegand Prairie Natural Heritage Landmark	NHL058	
Caterpillar Hill Prairie Natural Heritage Landmark	NHL203	
Ridgetop Hill Prairie Nature Preserve	NP123	
Spring Bay Fen Nature Preserve	NP076	
Chinquapin Bluffs Land and Water Reserve	LWR156	
Black Partridge Park Woods Land and Water Reserve	LWR120	
Letcher Basin Land and Water Reserve	LWR176	
	Total # of Areas in County	7

Appendix F
Arsenic, Cadmium, Lead, and Zinc
Results for Properties to be
Remediated

Table F-1. Laboratory Analytical Results
for Properties Less Than 5,000 Square
Feet

Old American Zinc Plant Superfund Site

Property Address	Property ID	Arsenic (mg/kg)												Cadmium (mg/kg)												Lead (mg/kg)												Zinc (mg/kg)															
		Back				Front				Side				Back				Front				Side				Back				Front				Side																			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"												
[REDACTED]	074	5.6 J	8.1	7.7	6.3	11.6	15.5	5.6	5.7	-	-	-	-	5.6	9.7	7.8	3.7	12.9	19.4	13.2	7	-	-	-	-	135	273	156	42.5	822	2,050	205	292	-	-	-	-	427	604	453	229	2,900	14,000	4,010	2,000	-	-	-	-				
	074	8.2 J	-	-	-	-	-	-	-	-	-	-	-	5.4	-	-	-	-	-	-	-	-	-	-	-	121	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
	091	8.9	10.4	8.1	6.1	8.4	8.7	8.3	6.6	-	-	-	-	6.1	4.4	2.1	1.3	5.3 J	4.5	2.9	1.7	-	-	-	-	197	259	75.9	46.8	118 J	119	68.2	41.3	-	-	-	-	707	411	381	377	396 J	384	292	222	-	-	-	-				
	091	-	-	-	-	7.6	-	-	-	-	-	-	-	-	-	-	-	5.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
	093	7.9	8.5	14.6	6.4	7.4	8.8	7.9	7.6	-	-	-	-	2.4	3.2	4.9	4.9	3.5	12.2	12.6	6.4	-	-	-	-	63.1	83.7	338	46.8	57.2	85	103	46.1	-	-	-	-	248	243	501	282	275	476	435	310	-	-	-	-				
	093	7.3	-	-	-	-	-	-	-	-	-	-	-	2.8	-	-	-	-	-	-	-	-	-	-	-	69.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
	102	13.2	9.2	7.4	6.5	11.9	17.7	10.8	8	7.1	9.6	7.9	5.7	6.4	5.2	2.7	1.4	6.1	7.3	6.2	1.4	5.4	8.4	4.4	1.8	477	212	58.4	34.7	171	150	71.4	24.8	135	183	97.3	32.5	531	412	291	186	560	643	383	234	437	575	338	189	-	-		
	102	-	-	-	-	-	-	-	-	-	9.2	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
	103	8.6	11.4	11.6	9.8	8.4	11.6	11.6	11.1	9.8	9.8	11.3	12.2	5.6	4.5	2.3	1.6	4.1	4.2	2.4	1.4	5.8	5.4	3.3	1.6	197	217	145	89.6	132	162	103	43.9	119	101	402	55.4	430	383	264	193	347	408	276	180	357	336	322	197	-	-		
	103	-	-	-	-	12.1	-	-	-	-	-	-	-	-	-	-	-	-	4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
	110	8.3	8.5	13.4	10.9	5.9	6.3	6.3	5.7	-	-	-	-	7.5	6.3	3	5	5.9	4	3.4	3.4	-	-	-	-	-	150	198	374	107	170	117 J	54.4	69.7	-	-	-	-	-	-	614	752	966	829	649	455 J	280 J	675	-	-	-	-	
	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	112	10.2	40.5	63.9	10	8.7	10.9	9.8	7	6.2	6.5	8.3	9.6	6.3	5.8	16.9	1.8	7.3	7.9	4	2.2	2.7	3.5	6.2	3.3	455	2,330	3,270	376	196 J	214	160	60	86.1	79.1	109	219	962	2,760	10,500	959	1,010	1,110	855	554	431	337	454	625	-	-		
	112	-	-	-	-	-	-	-	-	-	6.4	-	-	-	-	-	-	-	-	-	-	2.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	113	11.6	27.3 J	12	9.9	8.9	13.7	10.1	8.9	8.2	16	9.3	8.2	8	10.4 J	5.8	3.8	6.5	5.9	3.8	2.6	6.6	6.7	2.5	2.1	508	1,380	303	191	332	451	220	133	308	712	118	121	869	2,370	645	483	810	1,050	718	422	560	1,030	239	239	-	-		
	113	-	30.2	-	-	-	-	-	-	-	-	-	-	-	10.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	118	6.1	7.1	9.7	5.6	6.3	6	5.5	7.5	6.9	7	5.6	9	3.6	4.4	4.2	3.3	3	3.1	4.7	5	2	2.9	4	7.9	146	165	133	74.6	102	80.1	157	114	30.1	115	191	216	259	328	454	266	329	233	320	362	166	188	254	442	-	-		
	118	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	122	8.9	8.8	7.5	7.3	6.3	8.1	15.2	6.3	8.4	9.2	14.5	7.3	6.4	5.9	3	2.8	3.7	6.7	8.7	2.6	5.1	7	6.8	3.3	481	317	159	105	149	217	566	68.5	304	330	602	168	1,080	737	376	363	362	505	1,600	247	494	713	989	299	488	-	-	
	122	-	6.7	-	-	-	-	-	-	-	-	-	-	-	4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	814	5	8.2	5.8	8.1	6.7	6.4	7.8	5.9	-	-	-	-	7.2	11.5	4.2	3	8.1	8.1	10	4.2	-	-	-	-	74.5	88.8	40.8	43.4	110	65.6	72.1	22.4	-	-	-	-	430	563	273	256	570	424	432	404	-	-	-	-	-	-	-	-
	814	4.3	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	-	-	-	-	-	-	-	-	-	-	70.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	126	12.2	19	10.2	7.2	9.6	8.8	8.4	7	9.1	10.4	8.9	7.2	4.3	3.7	1.5	0.93	5.4	5.9	2.1	1.2	4.1	4.3	2	1.2	574	856	220	63	201	143	77.5	49.3	266	233	143	81.7	1,050	1,380	667	328	492	399	253	194	520	461	317	277	-	-		
	126	-	31	-	-	-	-	-	-	-	-	-	-	-	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	129	7.5	8.2	7.8	7.2	7.7	12.9	6.5	5.6	6.5	8.1	6.3	5.9	3.7	3.9	1.8	1.5	2.6 J	5.1	1.6	0.76	2.8	6.8	4.3	3	101	178	58.7	49.8	99.2 J	183	48	19.7	87.3	163	53.1	25	352	344	212	209	359 J	959	325	266	260	416	268	241	-	-		
	129	-	9	-	-	-	-	-	-	-	-	-	-	-	4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	764	5.8	6.2	11.1	14.4	-	-	-	-	-	5.5	7.6	3.6	6.5	0.75	13.9	7	23.5	-	-	-	-	-	-	-	25.6	159	336	266	-	-	-	-	62.7	212	78.5	245	110	6,630	1,790	1,600	-	-	-	-	430	1,460	656	347	-	-		
	764	-	7.6	-	-	-	-	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-</										

**Table F-2. Laboratory Analytical Results
for Vacant Properties Less Than 5,000
Square Feet**

Old American Zinc Plant Superfund Site

Property Address		Property ID	Arsenic (mg/kg)												Cadmium (mg/kg)											
			Back				Front				Middle				Back				Front				Middle			
			0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
		454	7.1	8.1	6.8	6.3	3.9	8.9	7.5	6.2	5.9	5.8	6.2	6.3	13.4	11.8	1.9	2	8.1	10.4	7.5	2.1	4.6	1.9	1.7	1.8
		454	-	-	-	7.5	-	-	-	-	-	-	-	-	-	-	-	2.6	-	-	-	-	-	-	-	-
		494	6.6	5.8	5.3	6.2	10.4	6.7	6.6	5.9	10.4	8.1	7.2	5.8	14.2	2.6	0.95	1.4	16.4	2.7	2.2	1.5	17	9.3	2.9	1.7
		494	8.2	-	-	-	-	-	-	-	-	-	-	-	12.5	-	-	-	-	-	-	-	-	-	-	-
		762	31.5 J	12.4 J	8.1 J	7 J	10.7	9.8	11.1	7.1	11	9.6	9.1	8	6.7	3.8	2.3	0.65	7.2	5.5	4.4	1.3	4	2.1	3.2	1.3
		762	18.1	-	-	-	11.2	-	-	-	-	-	-	-	5.4	-	-	-	7.6	-	-	-	-	-	-	-
		575	8.1	8.4 J	4.9	4	5.1	5.9	5.2	4	4.3	5	6.3 J	4.7	11.5	6.2	4	2.3	3.8	6.9	1.7	1.8	3.2	2.2	2.7	2
		575	-	7.8	-	-	-	-	-	-	-	-	-	-	-	5.8	-	-	-	-	-	-	-	-	-	-
		581	7.1 J	11.8 J	9.5	7.4	6.3 J	5.2 J	6.2 J	6 J	7.4 J	11.6 J	8.8 J	6.1 J	4.2 J	7.8	3.4	2.1	3.4	1.5	2 J	0.99	6	5.2	3.7	1.3
		581	6.1 J	-	-	-	-	-	-	-	-	-	-	-	2.5 J	-	-	-	-	-	-	-	-	-	-	-
		582	6.4	5.6	7.2	4.8	6.9	18.5	17.4	10.6	7.2	9.1	6.4	6.4	3	3.2	4.5	2.7	3	4.9	3.2	3.3	4.4	7.1	5.1	2.7
		582	-	-	-	-	-	-	-	-	6.6	-	-	-	-	-	-	-	-	-	-	-	4.6	-	-	-
		584	6.6	6.1	5.6	5.7	7	7	5.7	6.1	6.4	7.4	5.7	5.2	3	3	2.5	1.8	4.6	3.9	2.6	6.6	4.5	6.2	3.6	2.1
		584	-	-	-	-	-	-	-	-	7.1	-	-	-	-	-	-	-	-	-	-	-	4.1	-	-	-
		791	5.7	10.4	6.8	5.7	6.9	8.6	8.9	6.2	8.2	10.9	10	6.2	9.4	30.6	19.9	3.5	9.2	19.2	15.9	6.6	11.5	17.8	18.7	5.1
		791	-	-	-	-	-	-	-	-	-	-	-	6.1	-	-	-	-	-	-	-	-	-	-	-	3.6
		595	5.8	6.6	7.2	7.9	6.9	8.6	6.1	5.2	5.9	7.5	6.9 J	6.2	3.1	6.1	5.1	2.7	10.1	23.5	5.7	0.97	3.1	4.1	4.4	3
		595	-	-	-	-	-	11.8	-	-	-	6.9	-	-	-	-	-	-	-	34.4	-	-	-	4.9	-	-
		159	7.2	9.2	6.8	6.5	6.3	7.5	6.9	6.2	5.6	8.5	6.4	6.6	7.3	8.4	7.8	1.4	5	6.5 J	13.1	1.7	4.7 J	9.3	8.5	5.9
		159	-	-	-	-	6.8	6.9	-	-	-	-	-	-	-	-	-	-	5.4	9.4 J	-	-	-	-	-	-
		213	5	6.1	7.4	6.3	4.6	5.5	8	5.8	5.5	5.4	5.3	4.9	4.1	4.3	4.8	4	2.5	2.7	6.9	3.3	2.8	2.8	2.6	2.9
		213	-	7	-	-	-	-	-	-	5.4	-	-	-	-	5.4	-	-	-	-	-	-	2.7	-	-	-
		271	4.7	5.5	5.7	6.1	6	6.1	5.2	6	5.2	5.4	5.9	5.2	4.5	4.5	3.3	1.4	5.9	5.2 J	3	0.91	3.9	3.5	3.9	3.3
		273	6.1 J	5.8 J	5.7 J	5.5 J	5.8	5.4	4.5	4.9	6.6 J	6.5 J	6 J	5.9 J	3.7	4.1	4.3	3.2	5.6 J	5	4.5	0.96	4.9	4.5	4.2	3.1
		273	-	-	-	-	-	-	-	-	-	6.8 J	-	-	-	-	-	-	-	-	-	-	3.9	-	-	-
		403	8.2	11.6	11.7	8.9	8.5	11.2	7.6	6.9	9.7	10.5	7.7	7.7	2.3 J	13.2	14.2	4.6	11.1	12.5	5.4	2.4	6.1	5.8	5.5	3.5
		403	10.5	-	-	-	-	10.2	-	-	-	-	-	-	13.2 J	-	-	-	-	9.7	-	-	-	-	-	-
		699	5.4	5.9	5.8	5.5	5.8	6.3	5.2	5.7	6.4	6.7	5.5	5.6	6.6	6	2.1	2	6.7	10	1.8	2	8.4	7.1	2.7	1.5
		787	10	12.9	9.4	7.2	8.3	11.4	8.2	7	7.7	11.9	8.7	9.8	9.3	9.3	5.7	1.1	10	11	2.6	0.67 U	8.5	12.9	5.5	1.6
		787	-	-	-	-	7.9	-	-	-	-	-	-	-	-	-	-	-	10.3	-	-	-	-	-	-	-
		904	8.5	9.3	8.6	8.4	6.5	10.2	17.1	20.1	6.9	7.5	9	13.4	8.1	7.5	9.2	15.5	24.6	39.6	27.4	17.6	4.4	6.7	10.5	13
		904	-	-	9.3	-	-	-	-	-	-	-	-	-	-	-	8.8	-	-	-	-	-	-	-	-	-

Notes:

" - inches below ground surface

^ - No data for depth interval or sample section.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
mg/kg - milligrams per kilogram
FD - field duplicate
Result equal to or exceeding the cleanup level is shaded.

Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-2. Laboratory Analytical Results
for Vacant Properties Less Than 5,000
Square Feet

Old American Zinc Plant Superfund Site

Property Address	Property ID	Lead (mg/kg)												Zinc (mg/kg)											
		Back				Front				Middle				Back				Front				Middle			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	454	186	150	18.3	19.7	322	114	106	24.5	129	35.7	16.7	15	768	495	95.9	90.3 J	608	550	435	200	319	113	74.9	73.5
	454	-	-	-	31.1	-	-	-	-	-	-	-	-	-	-	-	165 J	-	-	-	-	-	-	-	-
	494	295	39.5	26.8	18.2	307	32.3	15.9	13.2	308	60.8	30.1	14.6	1,320	228	121	230	10,000 J	406	127	86.6	913	559	236	114
	494	339	-	-	-	-	-	-	-	-	-	-	-	1,760	-	-	-	-	-	-	-	-	-	-	-
	762	263 J	169 J	47 J	21.9 J	227	176	178	47.9	250	89.4	131	60.8	713 J	309 J	208 J	112 J	1,390	780	804	268	449	206	319	188
	762	254	-	-	-	279	-	-	-	-	-	-	-	549	-	-	1,650	-	-	-	-	-	-	-	-
	575	464	312	212	92.1	224	412	54.1	50.6	165	108	162	199	1,040	680 J	449	285	280	636	249	229	298	279	406	333
	575	-	364	-	-	-	-	-	-	-	-	-	-	-	709	-	-	-	-	-	-	-	-	-	-
	581	149 J	323 J	107	39.8	66.7 J	37.6 J	118 J	32.2 J	95.4 J	426 J	215 J	71.9 J	442 J	696	293	257	588 J	258 J	411	166	828	1,110	963	312
	581	95.5 J	-	-	-	-	-	-	-	-	-	-	-	288 J	-	-	-	-	-	-	-	-	-	-	-
	582	125	229	199	72.6	223	249	164	163	196	317	130	41.9	245	343	356	230	411	1,190	844	621	406 J	672	356	234
	582	-	-	-	-	-	-	-	-	154	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	584	108	179	186	19.6	257	234	201	113	126	140	70.4	25.3	208	208	166 J	134	520	511	209	354	380	595	597	345
	584	-	-	-	-	-	-	-	-	117	-	-	-	-	-	-	-	-	-	-	-	364	-	-	-
	791	90.4	131	57.6	15.5	121	78.1	42.5	15.2	70.2	104	47.8	17.6	449	874	619	175	397	576	473	301	459	623	485	295
	791	-	-	-	-	-	-	-	-	-	-	-	15.7	-	-	-	-	-	-	-	-	-	-	-	267
	595	82.9	96.9	83.5	122	172	150 J	68.4	55.4	96.7	161	119	198	516	636	824	849	1,310	1,260	493	296	424	689	721	505
	595	-	-	-	-	-	262 J	-	-	-	147	-	-	-	-	-	-	-	1,760	-	-	-	727	-	-
	159	136	141	59	19.7	76.5	76.8	104	18.4	97.3	98.2	66.1	47.3	629	619	599	185	402	423	639	324	462	648	565	514
	159	-	-	-	-	87.6	88.2	-	-	-	-	-	-	-	-	-	-	457	478	-	-	-	-	-	-
	213	29.4	31.6	31.6	20.1	38.2	29.3	35.6	23.2	28.6	24.7	20.4	14.2	147	144	167	120	160	144	187	115	151	150	99.3	81.2
	213	-	38.8	-	-	-	-	-	-	25.9	-	-	-	-	172	-	-	-	-	-	-	-	136	-	-
	271	64.9	52.2	40.6	25.1	66	50.4 J	33.3	22.4	64.2	56.6	68.4	77.3	313	298	239	155	401	339 J	247	141	295	257	279	250
	273	51.1	51.6	47	30.3	65.1	50.9	42.7	21	58.5	47.5	45	33.2	262	248	243	204	314 J	315	287	143	314	282	244	189
	273	-	-	-	-	-	-	-	-	44.7	-	-	-	-	-	-	-	-	-	-	-	-	258	-	-
	403	48.6 J	252	161	40	96	101 J	19.2	18.8	217	137 J	19.7	33.8	340 J	871	1,190	360	607	612	380	197	526	445	384	435
	403	228 J	-	-	-	-	52.5 J	-	-	-	-	-	-	885 J	-	-	-	-	452	-	-	-	-	-	-
	699	254	173	18.6	23.3	67.1	134	17.6	19.2	120	86.9	19	16.4	567	365	96.7	92.9	328	578	155	130	380	297	193	75.9
	787	151	62.4	33.7	16.9	96.4 J	47.2	26.2	21.4 J	119	97.7	35.9	27	556	524	427	290	518	509	325	129	458	596	475	316
	787	-	-	-	-	83.8	-	-	-	-	-	-	-	-	-	-	-	541	-	-	-	-	-	-	-
	904	87.4	61.3	37.6	24.3	149	364	131	46.8	33.1	47.2	91.6	36.6	343	278	307	361	959	1,360	674	420	196	462	422	307
	904	-	-	20.5	-	-	-	-	-	-	-	-	-	-	-	263	-	-	-	-	-	-	-	-	-

Notes:

" - inches below ground surface

^ - No data for depth interval or sample section.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
mg/kg - milligrams per kilogram
FD - field duplicate
Result equal to or exceeding the cleanup level is shaded.

Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address	Property ID	Arsenic (mg/kg)															
		A				B				C				D			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	440	6.3	6.7	7.4	6.4	6	6.9	7.3	6.3	7.9	10.3	7.5	6.5	3.9	5.4	6.6	5.9
	440	-	-	-	-	5.6	-	-	-	-	10.9	-	-	-	-	-	-
	005	7.9	6.6	6.7	6.7	7.1	8.3	6.7	6.4	8.4	7.9	5.5	7.3	7.8	7.2	7.1	-
	005	-	-	-	-	-	-	-	8.3	-	-	-	-	-	-	6	-
	046	6.1	8.6	9.6	5.5	7.4	6.4	6.3	5.7	6.5	7.7	6.2	5.9	8.2	7.2	5.7	6.1
	046	-	-	-	-	7.5	-	-	-	6.4	-	-	-	-	-	-	-
	062	9	9.8	8.3	7.4	10.9	10.3	8.5	7.3	11.7	9.4	13.2 J	9	11.7	10.3	8.3	7.6
	062	-	-	-	-	9.3	-	-	-	-	-	-	-	12.4	-	-	-
	063	20.7	22.8	19.5	7.2	16.4	14.6	9.9	10	9.3 J	8.5	8.7	7.2	6.6	7.8	8.6	8.7
	063	-	-	-	-	-	-	-	-	7.6	-	-	-	-	-	-	-
	869	5.5	5.1	5.8	4.8	5.5	5.1	5.8	4.8	5.2	6.1	5.1	4.9	8.1	6.9	6.5	5.9
	869	-	-	-	-	-	-	-	-	5.5	-	-	-	-	8.3	-	-
	546	11.9	18	13.6	10	12.5	15.7	10	8.6	6.1	8.3	9.5	9.5	24.5 J	25.7	9.1	7.8
	546	12.2	-	-	-	-	-	-	-	-	-	-	-	17.9	-	-	-
	067	8.3	8.2	12.6	10.5	8.7	8.4	8.8	8.7	6.9	7.1	8	8.3	8.3	7.9	8.1	7
	067	-	-	-	-	-	-	12.5	-	-	-	-	-	-	8.6	-	-
	844	11.4	8.4	6.5	6.1	5.9	5.7	6.5	6.6 J	6.2	6.9	6.4	6	15.2	18.9	6.5	5.7
	844	-	-	-	-	6.1	-	-	-	7.9	-	-	-	-	-	-	-
	070	6.8	7.5	7	5.8	7.4	8.4	7.7	5.5	9	9.5	8.9	7.8	11.2	7.1	6.1	5.6
	070	-	-	-	-	-	-	-	-	9.7	-	-	-	-	-	-	-
	071	8.1	7.6	7.2 J	6	6.7	8.1	12.1	7.4	7.1	8.6	7.3	6	8.5	11.6	7.4	5.3
	071	-	-	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-
	076	7.6	9.4	6.8	7	7.4	8.7	7.1	6	8.4	8.4	7	6.1	8.4	9.4	7.5	6.8
	076	-	-	-	-	-	-	-	-	-	-	-	-	9.2	-	-	-
	081	11.9	12.3	9.4	9.9	8.2	11.1	10.1	9.4	11.2	11.1	8.8	8.7	10.1	11.9	8.7	8.3
	081	-	-	-	-	-	-	-	-	-	10.5	-	-	-	-	-	-
	085	8.3	8.4	8.6	7.7	7.5	7.9	8.8	7.7	8.7	7.9	7.9	8	8	8.4	7.9	7.2
	085	-	-	-	-	-	-	-	-	-	-	-	-	7.4	-	-	-
	087	21.3	11.5	9	8.5	17.1 J	11.8	9.4	9.7	11.7	12.9	12	7.8	13.1	12.3	9.4	14.3
	087	-	-	-	-	27.2 J	-	-	-	-	-	-	-	14.8	-	-	-
	563	12.6	18.5	6.9	5.8 J	12	33.5	10.9	9.4	11.1	7.4	5.4	5.4	9.8	9.9	3.3	5.6
	563	-	-	-	3.8 J	-	-	-	-	-	-	-	5.3	-	-	-	-
	097	3.6	4.3	6.3	5.3	3.8	6.5	4.7	4.2	4.4	5.2	5.4	6.1	6.9	6.3	5.4	5.7
	097	-	-	6.9	-	-	-	-	-	-	5.3	-	-	-	-	-	-
	098	13.6 J	15.6	9.7	8.9	10	10.8	10.5	7.6	12	12.2	10.8	5.9	10.4	11	10.4	10.2
	098	13	-	-	-	-	-	-	-	-	12.4	-	-	-	-	-	-
	099	6.7	6.8	6.5	6.4	5.7	8.3	7.3	7	7	8.2	7.5	6.1	6.4	6.5	6.9	5.6
	099	-	-	-	-	6	-	-	-	-	-	-	-	6.6	-	-	-
	101	7.7	8.9	9	7.4	6.3	8.1	8.6	5.9	38.9	76.6	40.7	25.9	10.4	10.6	10.6	9.1
	101	-	-	-	-	6.5	-	-	-	-	54.5	-	-	-	-	-	-
	843	6.6	7.5	7.2	7.1	8.4	9.1	11.7	8	8.4	8.7	10	8.5	8.7	11.5	11.7	9.7
	843	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5	-
	571	6	8.1	8	12.1	5.2	5.6	5.1	5	5.5	6.5	6	5.8	5.7	7.6	5.5	5.3
	571	6	-	-	-	-	-	4.7	-	5.5	-	-	-	5.9	-	-	-
	106	6.6	8.7	8.1	8	7.8	8	9.1	8.9	8.5	9	8.1	7.2	7.9	9.6	7	5.3

Notes:
 - inches below ground surface; "-" - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address	Property ID	Arsenic (mg/kg)															
		A				B				C				D			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	106	-	-	-	-	8.1	-	-	-	-	-	7.8	-	-	-	-	-
	574	6.4	7.5	23	9.7	8.7	7.9	6.9	6	5.5	6.8	5.9	5.3	7.9	5.7	4.9	4.9
	574	-	-	-	-	7.3	-	-	-	-	-	-	-	-	-	-	-
	116	5.1	5.2	4.5	7.1	8.1	6.3	5.9	6.4	7.2	5.5	6.3	6.5	6.2	6.5	9.9	12.6
	116	-	-	-	-	-	10.2	-	-	-	8.9	-	-	-	-	-	-
	120	4.4	5.6	6.1	7.7	8	5.1	7.4	13.3	5.3	6	5.5	4.7	6	9	4.9	4.8
	120	-	-	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-
	820	7.2	8.5	9.4	11.3	7.5	8.2	10.5	8.6	6.9	10	12.6	19.3	7.5	9.8	22.9	10.8
	591	8.2	7.7	6.4	4.7	8.7	7.2	5.5	4.8	9.5	8.1	5.6	4.9	9.6	6.3	6.1	5
	591	9	-	-	-	-	-	4.9	-	-	-	-	-	-	-	-	-
	135	14.3	11.5	10.2	8.8	8.3	9	8.8	7.8	9.6	13	11.2	8.8	8.4	11.7 J	17.1	45.2
	135	-	-	-	-	-	-	-	-	-	11.1	-	-	9.5	-	-	-
	138	6.9	8.2	9.8	11.4	8.3	8.3	13.2	7.6	38.6	20.4	44.2	25	14.3	35.5	21.2 J	19.2
	138	-	-	-	-	-	-	-	-	-	-	-	-	21.3	45.5	-	-
	852	7.6	8	9.1	7.8	6.9	10	8.5	7.5	8	10	8.9	7.5	7.7	8.3	7.5	7.6
	852	7.4	-	-	-	9.7	-	-	-	-	-	-	-	-	-	-	-
	152	7.4	8.4	7.9	7	5.5	6.5	7.2	7.6	6.3	7.9	7.2	7.2	6.9	8.4	8	6.4
	152	7.3	-	-	-	-	-	-	-	-	-	-	-	7.6	-	-	-
	153	9.3	16.8	9.1	8.4	10.7	15	10	8.5	8	16.2	11.1	9.7	13.6	15.8	18	10.3
	153	-	-	-	-	-	10.5	-	-	-	-	-	-	-	-	-	-
	157	6	7.8	8.3	8	6.3 J	5.7	8.1	7.8	7	8.1	8	6.3	7.7	9.2	7.1	6.6
	157	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
	911	10.4	8.5	7.7	7	9.3	8.9	7.1	6.8	7.1	8.5	8.6	7.3	6.5	11.7	14	9.7
	911	-	-	-	-	-	-	-	-	-	-	-	-	7.1	-	-	-
	817	33.5	11.9	6.7	4.8	10.7	10.8 J	6.6	4.9	15.3	9.3	6.8	5	14.8	10.2	5.8	5.3
	817	-	-	-	-	9.5	-	-	-	-	9.1	-	-	-	-	-	-
	165	20.4	35.3	7.8	7.3	7.6	8.5	8.7	7.6	6.1	8	7.8	7.9	7.2	9	7.5	5.7
	165	-	-	-	9.3	-	-	-	-	-	-	-	-	-	-	-	-
	166	6.9	9.8	8.7	6.7	9.6	9.4	12	9	7	8.1	7.1	8.5	6.1	10.3	8.1	7.4
	166	-	7.8	-	-	-	-	-	-	-	-	-	-	-	-	7.7	7.5
	600	7.8	8.4	8.6	6.1	8.1	9.2	6.8	6.8	7.7	9.4	7.2	6.8	8.1	10.7	8.9	7
	600	-	-	-	-	-	-	-	-	7.4	-	-	-	-	9	-	-
	171	8.8	9.6	10	6	9.1	10.4	6.8	7.1	7.6	10.2	10.3	6.8	8.8	9.5	7.7	6.6
	171	-	9.4	-	-	-	-	-	-	-	-	-	-	-	9.9	-	-
	174	3.1	7	6.3	6.6	6.5	6.9	7.2	8.2	5.7	6.5	7	7.5	6.9	7.5	9.1	8.4
	174	-	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-
	176	4.8	6.1	6.1	6.7	7.5	6.3	5.8	6.5	5.4	8	7.8	9.2	5.9	8.1	7.7	6.9
	176	4.9	-	-	-	-	-	-	-	-	-	-	-	4.7	-	-	-
	177	7.9	9.8	8.2	8.9	7.9	10.2	7.8	8.8	8.5	10.6	10.1	7.9	10	7.7	8.1	7.7
	180	7.5	7.5 J	7 J	7.1 J	7.3 J	6.8 J	7.2 J	6.6 J	8.1 J	7.3 J	6.6 J	6.5 J	7.1 J	6.3 J	6.7 J	9 J
	180	-	-	-	-	-	7.2 J	-	-	-	-	-	-	-	6.4 J	-	-
	181	7.5	7.8	7.9	7.6	8	6.7	7.4	7.4	6.6	7.1	7.2	7.2	5.9	6.8	8	7.5
	183	7.5	7.6	8.5	7.9	5.3	6.2	6.6	7.4	6.2	6.3	6.6	6.5	6.9	8.4	8.8	7.2
	184	4.6	5.7	6.2	6	3.4	6.8	5.4	5.6	5.3	4.3	4.8	5.6	5.1	5.1	5.7	5.6
	184	-	-	-	-	-	5.2	-	-	-	-	-	-	-	-	-	-
	186	7.7	8.4	8.7	7.8	9.5	9.1	8.3	8.9	9.1	10.6	10.2	9	8.7	9.6	8.2	9.7
	186	7.9	-	-	-	-	-	-	-	-	-	-	-	-	9.3	-	-
	187	6.1	7.1	7.9	8.1	5.7	7.7	7.6	7.8	7	7.2	7.6	7.5	-	-	-	-
	187	-	-	-	-	-	-	-	7.7	-	-	-	-	-	-	-	-
	188	8.1 J	9 J	8.5 J	9.2	6.9	7	9.5	10.7	7.1	7.9	8.6	7.2	7	6.5	8.1	7.6

Notes:
 - inches below ground surface; "-" - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address	Property ID	Arsenic (mg/kg)															
		A				B				C				D			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	188	-	-	-	-	-	-	-	-	8.1	-	-	-	-	-	-	-
	190	5.5	5.6	6.6	6.1	6.6	7.7	5.7	4.4	4.2	9.5	9.9	7	5.8	6.3	7.3	5.9
	190	-	-	-	-	-	-	-	-	8.4	-	-	-	-	-	-	-
	191	6.6	5.6	4.9	5.2	5	5.3	8.7	9.5	5.5	7.4	7.4	5.6	6.3	6.2	6.3	6
	191	-	-	-	-	-	-	-	-	-	7.2	-	-	6.8	-	-	-
	192	4.9	5	5.1	6.7	4	4.4	5.8	6.8	4.1	4.4	5.9	6	5.6	5.7	5.1	5.7
	192	-	-	-	-	4.5	-	-	-	-	-	-	-	-	-	6.5	-
	193	8.1	9	8.3	9	6.2	7.8	8.6	8.2	8.2	8.1 J	7.8	8.7	8.1	9.5	9.1	8.4
	193	-	-	-	-	7	-	-	-	-	-	-	7.6	-	-	-	-
	194	6.9	4.9	5.1	5.6	5.5	5.5	6.4	7.8	5.5	6.3	7.5	7.3	5.9	7.3	6.8	6 J
	194	-	-	-	4.6	5.6	-	-	-	-	7	-	-	-	-	-	-
	195	5.3	6.7	6.6	6.3	5.7	6.4	6.2	6.2	5.2	7.1	7.2	6.3	6	7	8	6.9
	195	-	-	-	-	-	-	-	-	-	6.8	-	-	-	-	-	-
	196	4.9	4.6	4.7	5.3	5.3	3.8	5.4	8.5	5.4	6.9	7.7	9.4	6.4	7.9	7.7	7.9
	196	-	-	-	-	-	-	-	-	-	8.1	-	-	-	-	-	-
	197	4.4	3.8	4.7	6.7	5.1	5.8	5.9	5.4	5	5.7	6.6	6	6.6	6.4	7.1	6.2
	197	-	3.4	-	-	-	-	-	-	-	-	-	-	-	6.8	-	-
	199	4.5	5	4.6	8.4	5.2	4.7	10.6	10.4	6.2	5.3	8.6	9.8	4.1	4.9 J	6.8	8.2
	199	5	-	-	-	-	-	-	9.8	-	-	-	-	-	7.6 J	-	-
	202	6	6.3	7.9	7.2	5.8	6	6.8	5.9	5.8	4.8	7.3	7.2	5.9	6.4	6.9	6.8
	202	-	6.5	-	-	-	-	-	-	4.5	-	-	-	-	-	-	-
	204	5.6	5	8.7	7.7	4.4	46.4	8.4	17.3	6.8	5.9	5	7.8	5.4	6.1	5.9	7.5
	204	-	-	-	-	-	-	-	-	-	-	-	-	5.7	-	-	-
	206	7.3	8.6	9	7.9	8.1	8.4	8.8	7.9	11.5	14.1	13.7	7.6	8	9.1	8.8	7.6
	206	-	8.3	-	-	-	-	-	-	-	-	-	-	-	7.9	-	-
	207	7.6	8.5	7.9	8.8	7.6 J	7 J	7.3 J	7.7 J	6.4 J	8.2 J	8.8 J	7.5 J	7.6	8.4 J	7	7.6
	207	-	9	-	-	-	-	-	-	-	8.6 J	-	-	-	-	-	-
	209	5.5	5.8	5.8	6.1	6.2	6.4	7.4	5.6	5.1	5.6	7.2	6.2	5.2	5.9	5.2	5.7
	209	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7
	210	4.2	4.4	4.6	7.1	3.1	4.8	5.6	5.2	5.3	6.1	6.4	6.6	5.9	6.7	6.5	6.2
	210	-	-	-	-	4.3	-	-	-	-	-	-	-	-	-	-	-
	212	5.2	6.8	6.9	6.2	5.8	7.4	6	6.1	5.5	6.4	7.3	5	4.8	6.5	6	5
	212	-	-	-	-	6.4	-	-	-	-	-	-	-	-	6.9	-	-
	215	4.9	4.9	7.5	8.8	2.9	5.7	6.2	7.7	4.1	8.5	7.9	6.7	6.2	2.6	5.6	6.7
	215	-	-	-	-	3.6	-	-	-	-	-	-	8.2	-	-	-	-
	217	7.8	8.8	8.1	7.4	7.5	7.6	8.4	7.5	7.2	9.3	7.2	7.5	8	8.4	7.4	7.4
	217	-	-	-	-	7.2	-	-	-	-	-	-	-	-	7.3	-	-
	222	8.5	9.4	9.4	9.7	6.1	7.9	8.8	9.8	6.1	7.9	9.1	9.1	-	-	-	-
	222	-	-	-	-	7.8	-	-	-	-	-	-	-	-	-	-	-
	224	7.9	9.1	8.5	7.9	7.8	9.5	9.1	9.3	7.6	8.9	8.5	7.7	7.7	9	8.5	8.2
	224	-	-	-	-	-	-	-	-	-	8.8	-	-	-	-	-	-
	225	6	6.9	7.9	7.6	5.7	6.3	6.7	7.2	6.1	7.1	7.7	6.3	6.8	7.6	8.2	7.4
	225	5.8	-	-	-	6.1	-	-	-	-	-	-	-	-	-	-	-
	605	7.8	10.5	11	9.7	6	9.6	9.9	9	7.8	7.1	10.3	10.8	7.6	8.5	11.2	11.5
	605	-	-	-	-	6.8	-	-	-	-	-	-	-	-	-	-	-
	229	6.1	6.7	6.7	7.8	7	8.8	7.5	7.6	9.3	8.5	8.7	8.1	7.8	8.4	8.3	8.6
	229	-	7.3	-	-	8.1	-	-	-	-	-	-	-	8	-	-	-
	232	5.6	8.9	8.9	8.7	5.8	6.4	7	7.7	5.7	5.4	6.3	5.5	5.5	6.1	6.4	6.6
	232	-	-	-	10.7	-	-	-	-	-	-	-	-	5.4	-	-	-
	233	9	10	7.9	7.9	9	7.4	6.1	4.6	6.3	7.1	5.4	5.9	6.1	7.3	6.1	4.1

Notes:
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 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address	Property ID	Arsenic (mg/kg)															
		A				B				C				D			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	233	-	-	-	-	-	7.2	-	-	-	-	-	-	-	-	-	-
	234	8.2	10.7	11.1	9.6	11.3	12.3	9.4	9.2	11.8	13.3	11.2	9	11.8	12.7	9.1	9.4
	234	-	-	-	-	-	-	-	-	-	-	-	-	10.7	-	-	-
	235	8	10	9.6	8.1	6.1	9.2	10.8	9	8.9	10.7	10.4	9	9.6	10.2	8.9	9
	235	-	-	-	-	-	8.9	-	-	-	-	-	-	-	-	-	-
	237	4.4	5.3	8.7	8.6	7.4	4.6	10	9.6	8.6	9.9	9.4	8.6	9.7	8.6	8.7	8.3
	237	-	-	8.7	-	-	-	-	-	-	-	-	-	10	-	-	-
	241	7.6	7.6	6.7	6.9	7.9	8.1	7.3	7.7	7.2	8.7	7.8	6.9	9.2	10.7	7.9	7.5
	241	7.3	-	-	-	-	7.8	-	-	-	-	-	-	-	-	-	-
	243	7.9	8.3	7.2	8.2	7.1	6.9	8	7.6 J	6.8	9.1	7.2	8.4	8.3	8.6	9.1	7.7
	243	8	-	-	-	-	-	-	-	-	8.3	-	-	-	-	-	-
	246	6.4	7.3	7	8.5	9.5	10.1	8.8	8.6	8.3	10.5	9.2	8.5	8.7	8.7	8.4	7.5
	246	6.5	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-
	252	7.3	7.9	9	7	6.9	8	8.6	6.5	6.7	8.4	9.4	5.6	7.5	8.9	8.4	7
	252	-	-	-	-	-	-	6	-	-	-	-	-	7.7	-	-	-
	608	6.8	8.4	7	6	6.6	8.8	6.9	6.8	6.2	8.1	7.3	5.8	171	44.9	32.1	8.8
	608	6.6	-	-	-	-	-	-	-	6.2	-	-	-	-	-	-	-
	257	6.4	7.7	7.7	7.7	5.8	6.4	7.2	7.2	5.6	6	6.8	5.9	5.3	6.6	6	5.8
	257	-	-	-	-	5.6	-	-	-	-	-	-	-	5.9	-	-	-
	259	5.1	5.9	6.7	6.5	5.9	5.7	6.1	6.1	5.8	4.9	5.7	6	5.1	6.2 J	6.8 J	6.6 J
	259	-	-	-	-	-	-	-	-	-	4.4	-	-	-	-	-	-
	263	6.7	10.8	11.7	9.2	10.8	11.2	10.4	9.4	8.9	10.6	10.8	11.5	9.5	8.8	11.4	8
	263	-	-	-	-	8.8	-	-	-	-	-	-	-	10.6	-	-	-
	266	7.1	6.9	7.1	7.1	6.7	6.6	6.6	6.8	7.7	6.8	6.7	7.6	9.5	7	6.2	8
	266	-	-	-	-	6.9	-	-	-	7.4	-	-	-	-	-	-	-
	268	7.7	8.2	7.7	7.5	6	9.2	10.2	9	7.7	11.1	9.4	8.6	8.5	9.9	8.9	8.3
	268	-	-	-	-	-	-	-	9	-	-	-	-	-	-	-	-
	270	5.4	6.8	6.4	5.5	6.6	7.2	7.1	5.9	12.2 J	6.4	6.7	6	7.3	6.9	7	7.1
	270	-	-	6.5	-	-	-	-	-	-	-	-	-	-	-	-	7.5
	274	7	7.6	6.6	6.2	8.8	6.3	6.8	7.5	6.3	6.8	6.9	7	6.8	6.7	6.9	7.5
	274	-	-	-	-	9.3	-	-	-	-	-	-	-	-	-	-	-
	276	7.6	12.2	8.3	6	10.5	12.5	7.9	6.2	7.8	9.4	7.3	7	6.3	7.8	7.1	5
	276	-	11.4	-	-	-	-	-	-	7.6	-	-	-	-	7.3	-	-
	279	6.6	6.2	7.2	6	6.8	6.7	6.3	6.7	5.8	5.9	5.9	7.3	6.8	6.7	6.1	6.8
	279	-	7	-	-	-	-	-	-	-	-	-	-	-	6	-	-
	290	4.7	7	5.9	5.9	4.8	5.4	6.3	7.7	4.5	5.7	6.6	5.8	5.6	5.9	6.4	5.4
	290	-	-	-	-	5.3	-	-	-	-	-	-	-	-	-	-	-
	292	7.7	7.8	10.1	10.9	8.2	9.5	9.6	9.9	7.7	9.6	9.5	7.4	8.4	8.7	7.8	6
	292	-	-	-	-	-	-	-	-	7.9	-	-	-	-	-	-	-
	297	5	6.2	5.7	5.5	3.4	11.6	7.8	8.2	4.9	4.2	5.2	7.7	6.2	6.7	7.5	7.5
	297	4.6	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	299	4 J	7.3 J	6.1 J	5.7 J	6 J	6.7 J	6.5 J	6.7 J	7.3 J	7.2 J	6.4	6.7	6.6	6.6	6.9	6.9
	299	4.2 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	766	9	11.3	8.8	12.1	10.4	12.8	9.7	9.8	8.4	9.2	8.4	8	9.4 J	13.2	13.2	8.1
	766	9.8	-	-	-	-	-	-	-	-	-	-	-	10.2	-	-	-
	767	10.1	14.7	19	8.9	7.3	31.8	13.8	14.8	9.1	9.4	19	9.4	11.9	17	19.3	16.7
	767	9.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	309	6.6	7.4	7.3	6.5	7.2	7.1	5.9	5.9	7.3	12.5	5.6	6	7.7	6.2	6.1	6
	309	6.5	-	-	-	8.9	-	-	-	-	-	-	-	-	6.1	-	-
	310	6.2	6.8	7.1	6.1	5	7	5.8	7.9	5	7.3	7.8	7.3	5.9	7.1	8.9	5.7

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
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Old American Zinc Plant Superfund Site

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		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	310	-	-	-	-	-	-	-	-	4.9	-	-	-	-	-	-	-
	618	5.1	6.2	5.6	5.3	8.6	13.9	6.2	5.5	9.1	10.2	5.5	6.1	8.2	14.3	5.8	4.7
	618	5.7	-	-	-	-	10.1	-	-	-	-	-	-	-	-	-	-
	312	3.5	6.7	5	5.5	4.7	5.9	6.1	5.1	3.7	4.6	5.9	5.1	6.4	12.3	8	5.9
	312	-	-	-	-	4.9	-	-	-	-	-	-	-	-	-	-	-
	619	7.8	9.2	10.9	8.4	7.4	9.1	12.6	10.9	11	11.1	13	11.9	21	9.3	14.7	16.1
	619	-	-	-	-	-	-	-	-	-	-	-	24	10.8	-	-	-
	317	9.3	12	10.7	8.6	11.2	16.9	10.3	10.6	9.9	11	9.2	7.7	41.8	17.1	10.7	17.2
	317	-	-	-	-	-	-	-	-	6.8	10.1	-	-	-	-	-	-
	319	6.9	7.8	8.7	5.9	7.1 J	6.6	6.9	6.8	5.8	6	5.7	5.5	5.6	6.2	5.5	5
	319	-	-	-	-	-	6.4	-	-	-	-	-	-	-	-	5	-
	320	8.3	7.4	7.3	7.7	7	7.5	7.2	7.9	8.6	8.3	7.7	7.6	8	8.4	8.8	5.1
	320	7.7	-	-	-	-	-	-	-	-	-	-	-	8.2	-	-	-
	323	8.5	9.1	7.6	6.5	7.9	7.3	7.3	6.7	5.7	7	7.1	6.2	12	9.3	10.7	7.9
	323	-	9.1	-	6	-	-	-	-	-	-	-	-	-	-	-	-
	324	12.1	8	23.6	14.2	8 J	9.2	11.6	8.5	26.8	10.8	11.2	12.6	18	26.8	16.8	14.7
	324	-	-	16.5	11.2	-	-	-	-	-	-	-	-	-	-	-	-
	325	7	7.8	8.5	13.7	6.3	8.2	7.2	10.2	6.6	7.1	8.6	8.3	6.5	7.9	14.1	13.3
	325	-	-	-	-	-	-	-	7.9	6.1	-	-	-	-	-	-	-
	326	18.4	13.8	13.4	26.9	8.1	58.9	38.4	17.2	13	16.2	14.6	10.7	9.4	16	18.3	14.2
	326	-	-	-	-	-	51.6	-	-	-	-	-	-	-	-	-	-
	859	6	7	7.5	22.2	5.3	6.2	4.9	13.3	4.3	4.8	5.2	4.8	6.1	10.4	12.3	10.6
	859	-	-	-	-	5.9	-	-	-	5.7	-	-	-	-	-	-	-
	329	5	5.1	5.7	6.1	5.3	5.6	9.4	16.7	5.1	5.7	75.9	8.8	6	6	7.2	8.1 J
	329	-	-	-	-	-	-	-	12.8	-	-	-	-	-	-	-	-
	330	12.6 J	13.4 J	8 J	6.9 J	6.6 J	8.9 J	6.8 J	6.3	5.6	6.3	11.2	8.2	5.1	7.1	6.1	6
	330	-	-	-	-	-	-	-	-	5.4	-	-	-	-	-	-	-
	910	5.2	7.3	7.1	5.2	4.9	9 J	9 J	9.4 J	4.1 J	6 J	7.4 J	9.3 J	22.5 J	22.9 J	13.5 J	7.2 J
	910	-	-	-	-	5.3	-	-	-	-	-	-	-	21.8 J	-	-	-
	866	7	8.3	7.6	6.3	8.1 J	9.9	8	7.3	7.8	8	9.5	6.9	7.9	8.1	7.5	7.9
	866	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-
	909	9.2	8.2	7.5	7.2	7.1	7.8	6.7	7.4	7	7.8	6.8	6.8	-	-	-	-
	909	-	-	-	-	-	-	-	7.1	-	-	-	-	-	-	-	-
	908	39.8	14.1	12.9	12.2	10.5	16.7 J+	12.2	9.7	9.4	11.5	8.9	7.5	11	12.9	10.1	8.8
	908	-	-	-	-	16	-	-	-	-	-	-	14	-	-	-	-
	846	9.1	12.7	9	11.3	19.1	9.5	9.8	99	12.1	8.9	8.8	5.4	12	8.4	7.1	5.5
	846	-	-	-	-	9.2	-	-	-	-	-	-	-	-	-	-	-
	821	7.5	8.2	7.2	7.4	8.3 J	8	8.1	8.1	13.9	11.6	9	7.7	5.4	6.9	8.4	7.6
	821	-	-	-	-	7.4	-	-	-	-	-	-	-	-	6.7	-	-
	811	7.7	8.6	6.9	6.5	7.2	8.4	7.5	7.1	7.5	8.3	7.2	6.5	5.6	5.7	6.4	6.1
	811	-	-	-	-	7.5	-	-	-	-	-	-	-	-	-	-	-
	819	3.6	7.9	21.7	8.2	4.2	3.4	11 J	8	4.5	4.4	22.3	358	7.1	13.3	11.6	7.3
	819	-	-	-	-	-	21.2 J	-	-	-	-	-	-	-	-	16.3	-
	812	5.7	7.9	8.7	10	6.1	6.8	10.2	7.3	6	9.1	10.2	7.4	5.7	6.7	12.1	7.7
	812	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-
	825	6.6	5.7	5.6	6.2	9.9	11.3	12.2	5.8	7.6	8	8.2	10	6.4	6.9	14.5	44.5
	845	15	8.7	6.2	4.6	15.1	7.8	5	4.2	20.4	7	4.8	4.5	13.4	7.5	5.2	5.3
	845	-	-	-	-	16.1	-	-	-	-	-	-	-	-	7.4	-	-
	352	10	10.6	7.9	6.8	11.6	12.6	12.9	7	10	11.1	12.1	7.8	11.8	12.9	11.5	5.8
	352	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-

Notes:
 - inches below ground surface; "-" - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address		Property ID	Arsenic (mg/kg)																			
			A				B				C				D				E			
			0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
769 769 827 827 900 900 367 367 653 653 378 378 384 384 388 388 660 660 389 389 392 392 395 395 396 396 398 398 662 662 777 777 745 745 746 746 756 756 413 413	13.1	11.8	8.3	8.2	12.7	9.1	8	6.6	10.9	11.6	8.1	7.3	10.9	14.2	7.9	6.8	-	-	-	-		
	-	-	-	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	9.6	8.7	6.9	6	10.5	10	6.5	6	6.8	9.1	7.1	5.8	8.3	9.5	5.4	6.5	-	-	-	-		
	-	-	-	-	-	8.8	-	-	-	-	-	-	8.1	-	-	-	-	-	-	-		
	7.2	8.1	7.3	5.2	7.2	7.1	7.8	7.6	10	9.4	6.9	5.4	10.5	10.5	6.1	5.8	-	-	-	-		
	-	-	-	-	6.8	-	8	-	-	-	-	-	10	-	-	-	-	-	-	-		
	10.3	14	8.6	8	10.2	12.8	9.7	7.5	7.7	9	6.6	5.4	9.8	11.4	11	6.8	-	-	-	-		
	-	-	-	-	-	-	-	-	8.4	-	-	-	-	-	-	7.6	-	-	-	-		
	9.8	6.6	6.1	6.4	8.4	10.9	6	6.4	5.2	17.4	9.8	6.8	2.4	6.1	8	8	-	-	-	-		
	8.5	-	-	-	-	10.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	6.8	7.3	11.9	13.8	7.1	6.8	12.1	11.7	6.8	11.1	13.8	14.1	9.1	6.6	9.2	12.2	-	-	-	-		
	-	-	-	-	-	-	-	-	-	-	-	-	6.8	-	-	-	-	-	-	-		
	4.5	5.2	7.9	6	5	5.6	3.7	6.4	7.9	7.8	22.3	9.5	5.3	5.1	7.3	7	-	-	-	-		
	-	-	-	-	-	-	-	-	7.1	-	-	-	-	6	-	-	-	-	-	-		
	10	9.4	7	8.6	7.7	9	8.2	8.3	9.7	10.5	10.6	13.9	11.1	14.4	13.5	15.4	-	-	-	-		
	-	-	-	-	-	-	-	-	9.8	-	-	-	-	-	-	-	-	-	-	-		
	5.9	4.8	6.7	8.3	4.5	4.2	6.1	6.8	7.1	6.1	6.4	6.9	7.3	8.3	5.8	7.9	-	-	-	-		
	660	-	-	-	4.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	389	7.1	8.1	7.8	9.7	8.6	10	9.4	9.5	6	7.4	9.6	8.7	7.2	7.5	10.7	14.8	-	-	-	-	
	389	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	
	392	70.6	9.9	41.1	9.8	7.6	8.3	9.8	11.2	11.8	46.2	14.6	19.2	9.7	13.2	13.5	9.3	-	-	-	-	
	392	-	20.6 J	-	-	-	-	-	-	-	-	22.1	-	-	-	-	-	-	-	-	-	
	395	6.2	7	7.4	7	6.9	6.8	6.8	7	6.5	7.1	7.2	1.2 U	6.3	6.8	6.6	6.9	-	-	-	-	
	395	-	-	-	-	-	6.9	-	-	-	-	-	-	-	6.5	-	-	-	-	-	-	
	396	6.9	6.3	7.3	6.5	6.2	6.9	7.6	7.5	6.4	6.2	6.9	7.7	6.4	6.1 J	6.8	6.4	-	-	-	-	
	396	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	-	-	-	-	
	398	4.2	5.1	4.9	4.9	4.6	5.3	5.6	5	4.9	5	5.5	5	4.5	4.6	5.4	4.8	-	-	-	-	
	398	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	-	-	-	-	-	-	
662	5.5	5.9	6	7.4	5.2	5.1	6.3	5.9	6.5	7.7	6.1	7.3	6.4	7.5 J	7.4	6.4	-	-	-	-		
662	-	-	-	-	-	-	-	-	6.7	-	-	-	-	-	-	-	-	-	-	-		
777	7.5	13	13.2	9.8	10.2	12.3	11.6	9.3	11.1 J	11.9	9.2	9.3	10.2	11.4	9.9	9	-	-	-	-		
777	-	-	-	-	-	12.2	-	-	-	-	-	9.5	-	-	-	-	-	-	-	-		
745	14.3	9.7	7.7	8.2	15.3	12	7	6.4	14.9	11.6	8.4	7.9	23.6	14.1	8.7	8.9	-	-	-	-		
745	-	-	-	-	-	10.8	-	-	-	-	-	-	-	12.1	-	-	-	-	-	-		
746	10.9	8.2	5.8	4.9	8.9	7	5.5	5.5	9.7	8.7	6.3	5.4	9.4	7.7	6.9	5.9	-	-	-	-		
746	-	-	-	-	-	-	-	-	-	7.5	-	-	-	-	-	-	-	-	-	-		
756	4.9	9.4	5.5	5.8	5.9	9.4	6	5	10.1	8.6	5.9	5.9	14.6	10.2	7.5	4.7	-	-	-	-		
756	-	-	-	-	-	8.2	-	-	9.5	-	-	-	-	-	-	-	-	-	-	-		
413	6.6	7.6	5.2	4.6	10.3	10	5.5	5.6	10.4	9.2	5.8	5.6	10.5	11.3	6	7.5	-	-	-	-		
413	-	-	-	-	-	-	-	-	10.7	-	-	-	10.9	-	-	-	-	-	-	-		

Notes:
 - inches below ground surface; "-" - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address	Property ID	Cadmium (mg/kg)															
		A				B				C				D			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	440	10.1	8.5	20	8.9	7.1	11.6	5.8	6.2	11.7	21.8	6.7	4.6	3.2	7.6	12	3.5
	440	-	-	-	-	7.5	-	-	-	-	28.9	-	-	-	-	-	-
	005	23.6	23.7	9.6	1.1	12.8	18	2	2.3	10.9 J	12.5	5.1	3.2	17.2	11.3	4.2	2.2
	005	-	-	-	-	-	-	-	2.2	-	-	-	-	-	-	-	3.1
	046	13.9	6.9	6.1	1	13.4	14.6	11.4	2.5	16.9	29.4	7.6	6.3	18.6	16.3	4	13
	046	-	-	-	-	11.7	-	-	-	14	-	-	-	-	-	-	-
	062	5.8	4.9	2.5	1.3	7.8	4.2	1.8	0.98	5.7	2.7	2.6 J	2	7.5	3.6	2.8	0.4 J
	062	-	-	-	-	6.2	-	-	-	-	-	-	-	7.9	-	-	-
	063	8.8	6.4	2.7	1.2	11.7	4.8	1.6	2.9 J	4 J	4.6	5	4.1	3.5	3.3	4.3	2.4
	063	-	-	-	-	-	-	-	-	3.9	-	-	-	-	-	-	-
	869	4.7	4	5.4	3.1	3.8	3.4	3	1.8	5.1	4.4	2	1.6	6.4	2.9 J	2.8	3.2
	869	-	-	-	-	-	-	-	-	5.2	-	-	-	-	5.3 J	-	-
	546	6	7	9.2	1.7	5.5	5.2	2.5	1.3	2.3	2.1	2.2	2.6	7.2 J	7.5	2.6	1.5
	546	6.4	-	-	-	-	-	-	-	-	-	-	-	5.8	-	-	-
	067	5	4.3	5.4	3.2	4.7	3.8	4	3.5	4.8	3.6	3.9	3	6.5	5	3.3	1.9
	067	-	-	-	-	-	4.2	-	-	-	-	-	-	-	3.5	-	-
	844	48.7	34.1	7.7	1.7	4.5	15.8 J	7.9	1.4	1.8	1.6	7.9	20.4	15.6	28.6	9.5	7
	844	-	-	-	-	4.6 J	-	-	-	1.3	-	-	-	-	-	-	-
	070	3.8	3.3	2.5	1.6	4.8	4.9	3.7	1.7	5.9	5.6	4.2	3.3	7.1	2.1	1.8	1.6
	070	-	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-
	071	6.6	5.5	2.6	2.2	5.9	5.9	6.5	3.7	5.1	6.2	3.2	2.1	5.6	3.1	2.3	2.2
	071	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
	076	5.2	5.9	2.8	1.4 J	3.4	3.4	1.7	0.5	7.1	3.6	1.3	0.28 J	4.5	3.4	2.6	1.3
	076	-	-	-	-	-	-	-	-	-	-	-	-	4.9	-	-	-
	081	5.1	4.8	1.4	1.1	2.7	3.5	0.99	0.58	5.3	4.8	1.8	1.7	2.7	2.5	0.65	0.56 U
	081	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-
	085	3.1	2.4	3.8	4.6	2.2	2.8	7.2	4.2	3.1	2.5	8	3.3	4.1	6.6	5.3	0.55
	085	-	-	-	-	-	-	-	-	-	-	-	-	3.8	-	-	-
	087	5.2	4.6	3.1	1.2	10.5 J	4.9	3.7	2.3	6	4.5	2.7	1.9	6.5 J	5.7	2.1	3.1
	087	-	-	-	-	15.4 J	-	-	-	-	-	-	-	8.9	-	-	-
	563	14.6	10.3	5	2.8	15	20.1	10.5	6.7	15.8	21.5	9.8	4.4	9.8	7.9	2.7	5.4
	563	-	-	-	2.3	-	-	-	-	-	-	-	5.5	-	-	-	-
	097	2.3	4.1	9.6	6.2	4.4	10.1	6	3.1	5.1	6.2	3.9	4.2	10.6	8.5	3.5	4.1
	097	-	-	10.8	-	-	-	-	-	-	6.4	-	-	-	-	-	-
	098	5.4 J	5.3	2.5	0.74	6.8	6.2	2.7	0.97	7	5.7	3.4	0.74	6.8	4.5	2	2
	098	5.4	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-
	099	3	2.9	2.3	1.1	3.5	4.5	2.2	1.3	3.8	3.3	1.8	0.86	3.5	3.3	2.2	1.3
	099	-	-	-	-	4	-	-	-	-	-	-	-	3.8	-	-	-
	101	6	6.1	3.1	2.1	5.5	6.1	4.6	2.5	7.3	9.1	8.9	10	9.4	7.1	4.8	4.4
	101	-	-	-	-	5.3	-	-	-	-	7.7	-	-	-	-	-	-
	843	4	4.6	2.8	1.7	6.5	8.5	8.7	5.2	9.6	10.9	17	6.2	13.7	16.9	8.9	6
	843	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	-
	571	7	8.2	8.9	10.1	5.4	3.7	3.1	2.3	5.2	5.3	3.1	3.6	6.1	3.3	3	2.4
	571	7.1	-	-	-	-	3.1	-	-	5.6	-	-	-	6.1	-	-	-
	106	6.6	7.1	4.3	2.9	6	6	6.4	5.4	8	5.3	2.3	2.2	4.7	3.8	1.7	1.3

Notes:
 " - inches below ground surface; " - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address	Property ID	Cadmium (mg/kg)															
		A				B				C				D			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	106	-	-	-	-	6.5	-	-	-	-	-	2.4	-	-	-	-	-
	574	4.7	6.5	8.7	7.6	6.2	11.5	7.1	4.6	5.2	7.6	4.5	3.4	5	3.9	3	2
	574	-	-	-	-	11.5	-	-	-	-	-	-	-	-	-	-	-
	116	0.66	1.4	1	7.1	8.6	3.6 J	3	3.8	4.9	3.9 J	4.9	5.8	3.1	4.6	9.3	15.7
	116	-	-	-	-	19.4 J	-	-	-	-	6.9 J	-	-	-	-	-	-
	120	4.2	5.7	6.8	9.9	3.6	8	5.9	9.6	3.1	5.4	3.2	3.4	5.3	13.1	5	4.2
	120	-	-	8.2	-	-	-	-	-	-	-	-	-	-	-	-	-
	820	4.1	5.4	16.3	16.4	7.3	3.6	13.2	4.7	4.6	16.1	14.5	26.1	2.8	4.2	25	12.2
	591	9.3	13.6	12.7	3.5	7.8	11.5	12.2	5.7	7.1	13.1	11.5	7.3	8.8	16.3	11.7	5.8
	591	12.3	-	-	-	-	-	5.8	-	-	-	-	-	-	-	-	-
	135	11.9	7.1	3.4	2.4	6.9	4.6	2	2	8.3	9.4	3.9	3	5	9.4	15.4	6.1
	135	-	-	-	-	-	-	-	-	-	3.7	-	-	5.1	-	-	-
	138	3.5	5.9	3.5	4.9	5.4	5.3	5.3	2.8	6.3	6.1	14.5	4	6.3	11.8	13.4	9.4
	138	-	-	-	-	-	-	-	-	-	-	-	-	6.7	13.5	-	-
	852	5.7	8	14	10.2	4.3	3.8	7.2	4.1	5.2	8.5	10.3	3.6	11.3	8	3.9	0.8
	852	6.6	-	-	-	3.9	-	-	-	-	-	-	-	-	-	-	-
	152	4.6	4.5	4.9	5.6	2.6	3.8	3.3	4.8	3.7	3.5	5.6	6.7	5.2	6.2	4.6	2.2
	152	3.6	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-
	153	8.5	8.7	4.9	1.4	5.6	9.7	7	3.8	5.3	8.7	7.8	3	6.3	8.6	5.3	0.92
	153	-	-	-	-	-	6.8	-	-	-	-	-	-	-	-	-	-
	157	2.7	5.9	9.8	11.6	5.2 J	2.2	8.6	7.5	6.3	5.9	9.6	5.2	6.4	6	8.2	3
	157	-	-	-	10.1	-	-	-	-	-	-	-	-	-	-	-	-
	911	14	10.2	4.2 J	2.9	7.2	8.3	3.4	2.5 J	8.9	8.8	6.8	2.1	10.5	12.8	14.2	6.2
	911	-	-	-	-	-	-	-	-	-	-	-	-	11.1	-	-	-
	817	46.1	31.4	20.2	4.5	38	34.7 J	12.1	3.1	40.7	24.8	9.7	2.1	48.3	26.2	7.3	1.7
	817	-	-	-	-	37.9	-	-	-	-	25.8	-	-	-	-	-	-
	165	3.6	7.3	6.8	3.3	3.5	3.6	3	2.7	3.5	3.5	3.1	3.8	3.4	4.1	2.6	0.68
	165	-	-	-	3.7	-	-	-	-	-	-	-	-	-	-	-	-
	166	4.5	4.8	2.2	0.77	5.5	5	5.9	0.9	6.1	4.3	2.8	4.1	2.4	3.1	2.3	1.5 J
	166	-	3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3 J
	600	3	2.7	2.1	0.6	2.8	3.5	0.61	0.3 J	3.4	3.4	2.1	0.62	3.6	3.8	2.2	0.48 J
	600	-	-	-	-	-	-	-	-	3.1	-	-	-	-	-	2	-
	171	3.9	3.9	3.8	0.71	3.4	4.4	1.5	0.71	3	4.7 J	4.1	0.62	3.8	4.4	3.1	0.77
	171	-	3.9	-	-	-	-	-	-	-	-	-	-	-	4.1	-	-
	174	1.8	2.5	3.4	2.8	2.6	2.5	4	5	2	3.5	3	2.8	3.5	4.1	4.4	2.3
	174	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
	176	2.5	4.4	3.8	4.7	6.7	7.4	7.1	5.3	4.6	6.9	7	6.5	4.2	6.5	5.4	6.2
	176	2.9	-	-	-	-	-	-	-	-	-	-	-	3.2	-	-	-
	177	4.9	6.1	3.8	4.4	5.2 J	5.2	2	0.76	4.9	5.6	5	1.6	5.9	4.9	2.9	1.7
	180	4.3	4.8	5.2	3.9	3.5	5.2	6.5	5.5	3.3	3.4	4.8	2.7	4.4	4.7	3	3.3
	180	-	-	-	-	-	6.3	-	-	-	-	-	-	-	4.5	-	-
	181	3.7	4.4	5.4	3.1	2.3	2.9	4.1	4.5	2.2	2 J	3.8	3.7	2.2	2.8	5	3.1
	183	2.7	3.1	4.6	4.5	1.1	0.87	3.7	5.1	2.5	2.1	3.4	4.3	3.7	4.8	4.5	2
	184	2.6	3.3	5.6	5.5	1.2	2.1	4.3	3.7	2.4	1.7	3.2	5.4	2.5	3.1	5.6	4.9
	184	-	-	-	-	-	3.5	-	-	-	-	-	-	-	-	-	-
	186	5.3	6.6	3.3	0.53	5.1	6.5	5.2	1.2	6.2	6.6	5.5	0.97	6.1	6.2	6.2 J	1.2
	186	6.1	-	-	-	-	-	-	-	-	-	-	-	-	3.7 J	-	-
	187	1.7	4.2	5.5	2.4	0.93	5.8	5.2	2.2	3.7	5.3	4.6	0.58	-	-	-	-
	187	-	-	-	-	-	-	-	2.9	-	-	-	-	-	-	-	-
	188	4.6 J	5.1	4	5.2	2.9	2.5	4.7	4.7	2.8	3.3	3.5	1.5	3.2	2.8	4.2	2.9

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property ID	Cadmium (mg/kg)																			
	A				B				C				D				E			
	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
188	-	-	-	-	-	-	-	-	3.8	-	-	-	-	-	-	-	-	-	-	-
190	4.3	5	4.3	2.7	5.4	5.6	3.2	1.8	1.6	7.5	7.9	5.6	4.5	5	5.8	4.1	-	-	-	-
190	-	-	-	-	-	-	-	-	6.9	-	-	-	-	-	-	-	-	-	-	-
191	2.3	1.8	1.7	1.8	1.9	2.2	5.6	6.4	2.2	3	4.6	2.7	3.4	4	4	3.6	-	-	-	-
191	-	-	-	-	-	-	-	-	-	3.4	-	-	-	4.6	-	-	-	-	-	-
192	2.5	2.7	3.1	4.4	2.2	2.4	4.2	4.7	2.7	2.3	4.5	4.4	2.4	2.6	3.3	2.7	-	-	-	-
192	-	-	-	2.2	-	-	-	-	-	-	-	-	-	-	-	4.7	-	-	-	-
193	3.9	4.1	3.1	3.3	2.7	3.4	3.1	4.3	2.7	1.8 J	2.2	4.6	3.1 J	5.1	4.2	4	-	-	-	-
193	-	-	-	-	2.8	-	-	-	-	-	-	-	3.8	-	-	-	-	-	-	-
194	5.9	1.3	1.6	3	2.2 J	1.7	2.9	4.2	2.1	2.8	4.6	3.1	4.6	5	3.2	0.99	-	-	-	-
194	-	-	-	1.4	1.5 J	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-
195	5.3	7.9	5	4	4.5	6.3	4.6	2.1	3.6	4.7	1.7	0.89	3.9	4.4	3.3	1.4	-	-	-	-
195	-	-	-	-	-	-	-	-	-	4.8	-	-	-	-	-	-	-	-	-	-
196	0.75	0.67	0.54	1.5	2.3	0.66	2	3.5	1.2	2.9	3.6	3	2.7	4.5	2.6	0.64	-	-	-	-
196	-	-	-	-	-	-	-	-	-	-	3.5	-	-	-	-	-	-	-	-	-
197	1.8	1.3	3.1	6.5	3.5	4.9	2.6	2.5	4	4.7	5.6	3.8	5.7	5.2	4.1	1.8	-	-	-	-
197	-	1.2	-	-	-	-	-	-	-	-	-	-	-	5.7	-	-	-	-	-	-
199	1.7	2.6	1.1	5.6	3.5	1.6	9.9	7.3	4.2	3.3	8	6.6	1.9	2 J	4.1	5.3	-	-	-	-
199	1.8	-	-	-	-	-	-	7.5	-	-	-	-	-	3.9 J	-	-	-	-	-	-
202	1.9	2.3	3.1	1.7	1.4	2.1	3.3	2.3	2.2	2.7	6.3	5.4	3.2	3.9	4.8	4.8	-	-	-	-
202	-	2.2	-	-	-	-	-	-	2.3	-	-	-	-	-	-	-	-	-	-	-
204	3	2.9	4.2	2.3	2	3	4.3	4	7.1	3.4	2.8	5.6	3.2	2.9	3.7	3.9	-	-	-	-
204	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3	-	-	-	-	-	-
206	2.8	3.5	3	0.65	3.1	2.5	3.4 J	1.1	2.3	3.6	2.2	0.66	2.8	3.2	2	2	-	-	-	-
206	-	3.8	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
207	3.3	3.7	1.8	0.51	2.8	1.2	3	0.92	2.6	3.4	3	1.3	4.2	4 J	1.3	0.32 J	-	-	-	-
207	-	3.9	-	-	-	-	-	-	-	3.5	-	-	-	-	-	-	-	-	-	-
209	3.1	4.1	5.1	4.6	3.1	5.2	4.6	2.1	1.6	2.3	4.1	2.9	2.1	2.4	3.2	2.3	-	-	-	-
209	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	-	-	-	-
210	1.8	1.6	2	5.6	1.9	1.6	3.5	1.4	3.2	2	3.2	5.2	3.7	4.9	3.6	4.1	-	-	-	-
210	-	-	-	-	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
212	3.4	4.9	4.7	2.4	4.4	5.2	4.1	3.2	4.5	5	4.2	2.4	3.9	5.1	3.2	1.6	-	-	-	-
212	-	-	-	-	-	4.7	-	-	-	-	-	-	-	-	3.8	-	-	-	-	-
215	2.7	2.1	4.3	5.2	1.6	2.2	5.7	1.8	2.9	5.4	3.5	3.3	1.2	3.7	3.3	-	-	-	-	-
215	-	-	-	-	1.5	-	-	-	-	-	4.1	-	-	-	-	-	-	-	-	-
217	3.6	3.9	2.3	0.42 J	3.4	3.3	3	1.1	3.4	5 J	1.8	1	4	4.4	1.1	0.64	-	-	-	-
217	-	-	-	-	3.6	-	-	-	-	-	-	-	-	-	0.85	-	-	-	-	-
222	3.1	4.5	8.3	5.8	1.9	2.6	4.8	5.6	2.6	3.9 J	4.5	5.1	-	-	-	-	-	-	-	-
222	-	-	-	-	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
224	6.7	7.3	2.2	1.8	7.4	9	2.5	1.1	6.3	5.7	2.9	0.79	7.5	6.1	4.8	1.6	-	-	-	-
224	-	-	-	-	-	-	-	-	-	3.6	-	-	-	-	-	-	-	-	-	-
225	2.8	3.3	7.1	3.8	1.8	3.1 J	4.6	4.2	1.9	3.3	4.5	2.6	3.8 J	5.3	4.3	2.2	-	-	-	-
225	2.6	-	-	-	-	1.7 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-
605	5.4	6.7	6.7	1.3	3.4	5.9	4.8	1.8	1.1	1.6	8.3	6.6	2.1	4.1	6.3	4.5	-	-	-	-
605	-	-	-	-	2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
229	5.1	4.1	2.4	1.1	4	6	2.6	2.3	5.7	6.5	3.4	0.91	4.6	5.2	4.6	2	-	-	-	-
229	-	3.8	-	-	-	4.7	-	-	-	-	-	-	5.2	-	-	-	-	-	-	-
232	3.1	8.1	6.8	8.6	0.99	0.6	4	6.2	2.8	4.9	7.1	2.8	4.7	4.4	4.8	1.8	-	-	-	-
232	-	-	-	10.1	-	-	-	-	-	-	-	-	5.1	-	-	-	-	-	-	-
233	2.9	4.4	3.2	0.95	4.9	5	2.4	0.58	4	4.3	2.1	1.6	3.3	4.1	2.6	0.9	-	-	-	-

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property ID	Cadmium (mg/kg)															
	A				B				C				D			
	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
233	-	-	-	-	-	4.5	-	-	-	-	-	-	-	-	-	-
234	4.8	6.9	6.2	4.5	7.8	8.5 J	3.7	1.9	8.5	6.8 J	4.6	1.1	7.1	5.9	1.8	1.8
234	-	-	-	-	-	-	-	-	-	-	-	-	6.8	-	-	-
235	4.8	6.7	5	2.3	4.1	6.3	6.6	1.9	6.2	8	5.7	3.3	8.2	6.9	3.7	3.5
235	-	-	-	-	-	5.5	-	-	-	-	-	-	-	-	-	-
237	2.6	4.2	5.4	4.2	3.8	2.7	6.5	5.2	6.9	7.4	4.1	2.8	5.9	3.9	3.7	2.1
237	-	-	5.3	-	-	-	-	-	-	-	-	-	6.3	-	-	-
241	6.8	6.1	2.2	1.2	4	4.3	3.4	4.4	3.6	4.3	5	2	3.9	5.6	5.7	2.7
241	6.6	-	-	-	-	4.1	-	-	-	-	-	-	-	-	-	-
243	6.8	5.7	2.8	1.5	5.5	4.5	1.2	1.1 J	2.4	3.9	4.5	1.1	4.4	4.6	2.8	0.77
243	6.3	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-
246	4.4	4.5	2.7	0.59	5.9	5.6	3.1	0.64	4.7	4.9	2.7	0.63	7.2	4.7	2.6 J	0.6
246	4.7	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-
252	7.8	5.8	4.2	3.2	5.9	5.1	4.2	2.3	4.8	6.2	4.6	2.1	6.5	6.1	3.8	3.2
252	-	-	-	-	-	-	-	1.7	-	-	-	-	7.5	-	-	-
608	7.4	5.4	2.2	1.9	5.8	6.4	2.4	1.5	6.5	5.8	4.5	1.2	7.3	5.1	4.6	1.7
608	6.2	-	-	-	-	-	-	-	6.3	-	-	-	-	-	-	-
257	2.5	4.1	5.2	4.7	1.1	2.4	4.8	3.9	2.6	3.5	3.9	3	2.4	2.6	1.7	0.6 U
257	-	-	-	-	1.3	-	-	-	-	-	-	-	-	2.5	-	-
259	1.3	2.8	4.4	2.5	1.5	3 J	3.7	3.3	0.77	1.7	3.1	2.4	1.5	2.9	3.4	1.7
259	-	-	-	-	-	-	-	-	-	1.6	-	-	-	-	-	-
263	4.3	8.1	5.5	1.4	5.3	9	3.3	1.6	2.3	5.7	4.3	3.3	6	3.6 J	3.3	0.74
263	-	-	-	-	3.2	-	-	-	-	-	-	-	-	5.3 J	-	-
266	5.8	6.4	6.3	2.9	5.3	5.6	3.8	5.6	6.3	6.6	4.2	3.2	5.3	5	2.4	3.3
266	-	-	-	-	5.9	-	-	-	6.1	-	-	-	-	-	-	-
268	8.1	6.1	2.4	1	2.9	8.9	3.2	2.4	4.2	5.6	2.1	1.9	6.3 J	6.6	3.8	3.5
268	-	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-
270	4.4	3.8	2	0.56	4.2	3.6	3.8	0.49	2	2.6	2.4	0.58	4.8	3.5	1.2	0.94
270	-	-	2.6	-	-	-	-	-	-	-	-	-	-	-	-	1.1
274	5.5	6.1	5.5	1.5	4.1	4.3	3.2	0.83	5.1	4.2	2.2	1.5	4.9	5.1	1.9	1.5
274	-	-	-	-	3.3	-	-	-	-	-	-	-	-	-	-	-
276	5	7.1	2.9	2.1	8.3	8.5	2.9	2.4	6.6	6.7	3.2	3.8	4.4	5.1 J	1.9	0.71
276	-	6.8	-	-	-	-	-	-	6.1	-	-	-	-	5.1	-	-
279	5.8	9.9 J	5.7	1.6	6.2	4.4	2.6	2.3	4.9	4	1.3	0.76	4.9	4.8	2.7	0.59
279	-	6.1 J	-	-	-	-	-	-	-	-	-	-	-	-	2.3	-
290	2.5	5	3.9	5.4	2.1	3.1	4	5.1	3.2	4.6	3.7	2.5	3.2	4.3	4.8	2.6
290	-	-	-	-	-	3.5	-	-	-	-	-	-	-	-	-	-
292	3.9	3	4.8	5.7	3.4	4.6	5.1	5.2	4.5	4.9	5.9	2.6	5.4	5.5	2.2	0.67
292	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-
297	2.4	3.2	4.5 J	3.2	1.7	2.5	4.2	6.1	2.9	2.9	3.9	3.9 J	3	4.8	2.8	2.9
297	2.1	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
299	3.2	8.7	4.4	1.9	4.6	6.4	3.1	2.6	3.5	3.4 J	3.2	2.7	3.7	3.4	3.5	2.6
299	2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
766	8.8	27.1	6.5	8.4	8.2	8.3	5.3	6.6	6.8	5.2	3.3	2.9	6.2	5.8	4.6	3.7
766	10.1	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	-
767	5.8	5.6	8.5	2.8	7.7	8.1	5.9	6.5	7.2	4.7	11	3.9	6.1	7	8.1	12.8
767	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
309	7.9	6.9	4.8	4.1	13.8	9.7	2.1	2	7.3	18.8	2.8	3.7	5.4	3.7	3.4	2.4
309	7.4	-	-	-	13.6	-	-	-	-	-	-	-	-	3.4	-	-
310	4	4	4.2	4.8	4.6	3.5	4.6	6.2	6.6	5.5	6.9	7.8	6.2	4.1	7.5	1.4

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address	Property ID	Cadmium (mg/kg)															
		A				B				C				D			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	310	-	-	-	-	-	-	-	-	4.9	-	-	-	-	-	-	-
	618	5	3.7	2.7	2	7.1	6.7	3.6	3.4	7.7	7.7	3.9	4	8.9	10.9	3.6	3
	618	5	-	-	-	-	9.1	-	-	-	-	-	-	-	-	-	-
	312	2.1	3.9	0.58	2.8	3.5	3.3	2.5	1.1	2.7	3.5	4.6	2.1	2.9	2.7	3	2.2
	312	-	-	-	-	3.6	-	-	-	-	-	-	-	-	-	-	-
	619	10.8	9.4	5.2	4.7	10.7	7.7	6.9	4.3	10.6	8.5	5.6	5.1	10.3	8	8.4 J	6.1
	619	-	-	-	-	-	-	-	-	-	-	-	-	10.7	8.4	-	-
	317	4.1	4.9	3.3	1.3	3.7	5.6	2.9	1.7	7.3	5.5	3.2	2.5	11	5.9	3.7	7.2
	317	-	-	-	-	-	-	-	-	4.9	5.4	-	-	-	-	-	-
	319	3.3	4.1	3.5	1.3	4.7	4.7	2.8	1.4	2.9	3.3	1.7	0.66	3.1	3.3	1.3	0.74
	319	-	-	-	-	-	4.7	-	-	-	-	-	-	-	-	-	0.54
	320	3.8	3.2	2.4	1	4.5	4.8	3	2.7	5.6	5.4	3.4	1.1	6.1	5.4	2.9	0.77
	320	4.3	-	-	-	-	-	-	-	-	-	-	-	5.8	-	-	-
	323	6.3	7.7	7.1	5.2 J	5.7	5.4	7.6	4.8	5.3	6.6	5.2	3.7	5.5	6	6.6	3.4
	323	-	7.5	-	5.2	-	-	-	-	-	-	-	-	-	-	-	-
	324	6.8	5.6	8.3	6.7	4.7 J	6.7	6.3	4.1	18.7	162	4.3	4.7	9.5	14.2	6.4	6.2
	324	-	-	7.3	6.7	-	-	-	-	-	-	-	-	-	-	-	-
	325	3.2	2.2	1.5	6.6	1.3	1.3	1.6	6.7	2.1	2.5	4.2	3.9	2.7	2.7	4.8	4.9
	325	-	-	-	-	-	-	-	5	1.9	-	-	-	-	-	-	-
	326	10.5	8.3	8.5	8.5	7.5	19.6	8.2	8.6	11.2	15.2	8.5	3.8	5.7	6.9	8.2	4.6
	326	-	-	-	-	8.6	24.3	-	-	-	-	-	-	-	-	-	-
	859	3.2	3.8	11.8	7.2	3.3	2.4	4	11.7	2.7	2	4.6	7.2	3.5	4.9	10	7
	859	-	-	-	-	3.8	-	-	-	3.3	-	-	-	-	-	-	-
	329	4.9	2.7	3	4.3	3.1	3	4.4	6.6	3	2.4	6.6	7.1	2.6	1.8	5.9	11 J
	329	-	-	-	-	-	-	-	4.7	-	-	-	-	-	-	-	-
	330	10.6	10.1	5.4	1.1	9	11.9	2.5	0.79	6.1	6.7	6.8	3.7	3.8	6.2	4.1	1.3
	330	-	-	-	-	-	-	-	-	6.1	-	-	-	-	-	-	-
	910	4.2	5.2	5.3	3.3	2.7	1.9	10.9	15.2	1.6	2.5	8.2	17.7	5.6	8.8	6	5.7
	910	-	-	-	-	2.6	-	-	-	-	-	-	-	6.4	-	-	-
	866	2.4	3.2	2.6	1.3	6.7 J	10.9	3.5	1.1	7.4	6.3	8.7	1.9	9.2	5.6	4.7	2
	866	-	-	-	-	-	-	-	1.6	-	-	-	-	-	-	-	-
	909	20.8	20.8	8.4	3.4	11.9	12.8	5.3	1.4	7.6	7.2	4.3	2.1	-	-	-	-
	909	-	-	-	-	-	-	-	7.1	-	-	-	-	-	-	-	-
	908	10.7	4.1	2.2	4.2	3.8	6.6	3.8	2.3	4.4	9.1	2.5	1.2	11.4	8.1	4.1	1.8
	908	-	-	-	-	-	8.7	-	-	-	-	-	-	13.7	-	-	-
	846	5.2	13.4	4.7	5.9	19 J	10.4	20.8	30.4	8.1	5.1	4.5	0.74	13	13.6	13.9	1
	846	-	-	-	-	-	10.1	-	-	-	-	-	-	-	-	-	-
	821	9.1	9.8	2.3	1.2	9.8 J	7.5	2.3	1.3	16.6	16.1	6.8	1.9	4.7	8.1	10.7	3.5
	821	-	-	-	-	9.7	-	-	-	-	-	-	-	-	7.9	-	-
	811	3.9	1.4	3.4	3.4	2.2	3.4	2.5	1.5	2.9	13.8	2.5	2.7	0.61 U	3.8	2.5	1.1
	811	-	-	-	-	3.4	-	-	-	-	-	-	-	-	-	-	-
	819	4	28.2	84.1	13.8	1.9	1.5	9.9 J	14.7	3.7	10.6	42.8	92.6	5.3	10	18.8 J	14.2
	819	-	-	-	-	-	-	21.5 J	-	-	-	-	-	-	-	31.5 J	-
	812	4	11.7	11.6	18.4	8.1	10.2	21.9	7.6	6.6	9.4	19.8	4.7	4.9	10.5 J	33.1	10.4
	812	-	-	-	-	-	-	-	-	-	-	-	-	-	10.6	-	-
	825	14	8.4	2.6	1.9	24.3	23.2	38.8	9.9	11.3	12.4	13.3	22.9	7.2	7.2	24.3	143
	845	70.5	54	35.9	15.7	68.9	55.4	30.2	8.8	71.4	53.6	38.1	13.5	56.8	52.5	25.2	8.6
	845	-	-	-	-	70.9	-	-	-	-	-	-	-	-	51.8	-	-
	352	22	20.6	8.8	6.4	25.4	25.9	20.6	7.9	18.5	31.2	26.2	12.2	27.1	26.3	17.8	6.8
	352	-	-	-	-	-	-	-	-	-	-	-	-	29.8	-	-	-

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

		Cadmium (mg/kg)																			
Property Address	Property ID	A				B				C				D				E			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	769	19.7	13.5	2.2	0.7 U	17.4	21	4.2	0.69 U	27	16.9	3.5	1.2	18.6	12.1	2	1.1	-	-	-	-
	769	-	-	-	-	-	21.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	827	16.4	18.2	5.4	10	17.7	18.1	5.3	3.1	12.1	18.2	7.1	3.8	13.2 J	14.8	4	2.8	-	-	-	-
	827	-	-	-	-	-	16.2	-	-	-	-	-	-	18.8 J	-	-	-	-	-	-	-
	900	11.6	15.2	10.3	2.3	10.5	9.8	10	12.6	21.8	16.4	3.4	2.1	18	19.2	3.4	2.9	-	-	-	-
	900	-	-	-	-	9.2	-	9.9	-	-	-	-	-	21	-	-	-	-	-	-	-
	367	19.3	18.2	12.4	10.8	15.6	11.9	14.2	7.3	11.7	11.7	5.9	3.4	10.7	11.8	9.9	4.5	-	-	-	-
	367	-	-	-	-	-	-	-	-	12.5	-	-	-	-	-	-	5.6	-	-	-	-
	653	13.6	13.8	10.7	5.3	14.1	17.9	7.3	2.8	9.7	13.3	6	4.4	5.7	16.3	25.5	10.3	-	-	-	-
	653	12.2	-	-	-	-	16.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	378	7.7	12.4	18.2	10.6	6.6	7.7	12	9.8	9.6	13.1	12.8	10	13.6	12	14.2	8	-	-	-	-
	378	-	-	-	-	-	-	-	-	-	-	-	-	11.5	-	-	-	-	-	-	-
	384	6.2	6.5	35.2	22.7	4.3	4.4	4.3	5.4	20	17.5	19.8	13.8	4.9	4.3	10.2	12.7	-	-	-	-
	384	-	-	-	-	-	-	-	-	18	-	-	-	-	5.3	-	-	-	-	-	-
	388	35.1	27.2	7.6	15.6	5.3	2.5	0.79	0.81	24.8	34	18.6	8.7	17.8	34.5	37.2	18.2	-	-	-	-
	388	-	-	-	-	-	-	-	-	32.5	-	-	-	-	-	-	-	-	-	-	-
	660	10.2	5.4	12	2.3	5.6	8.4	14.3	7.2	14.6	6.4	2.3	2	14.5	14.1	4.2	2.6	-	-	-	-
	660	-	-	-	-	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	389	5	7.9	5.6	9.2	6	9.5	11.7	6.8	3.7	6.6	11.1	3.8	5.7	7.1	5.5	3	-	-	-	-
	389	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-
	392	9.8	5.4	8.3	3.3	5.5	9.5	11.6	3.8	5.9	6.2	2.7	8.7	8.5	4.3	1.7	3.8	-	-	-	-
	392	-	7.4	-	-	-	-	-	-	-	-	2.8	-	-	-	-	-	-	-	-	-
	395	5	6.3	3.6	0.64	4.8	4.5	2.4 J	3.2	4.4	4.8	2.9	0.61 U	5.4	5.5	1.8	0.66	-	-	-	-
	395	-	-	-	-	-	-	4.1 J	-	-	-	-	-	-	5	-	-	-	-	-	-
	396	3.4	4.2	3.9	0.89	3.4	3.8	4.2	1.4	3.9	3.3	1.9	1	4.2	3.4	2	1.2	-	-	-	-
	396	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	-	-	-	-	-	-
	398	4.8	3.8	2.3	3.7	3.1	3.4	3.8	2.2	3.1	4.2	4.8	2.4	3.9	4.4	3.2	1.3	-	-	-	-
	398	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-
	662	1.7	0.91	0.69	1.6	3.2	1.9	3.1	3.3	6.9	6.3	2.4	0.6	3.3	3.7	2	1.1	-	-	-	-
	662	-	-	-	-	-	-	-	-	6.9	-	-	-	-	-	-	-	-	-	-	-
777	2.7	10.9	11.3	1.8	8.2	10	7.7	1.6 J	8.8 J	8.9	2.7	2.1	7.8	9.3	3.9	2	-	-	-	-	
777	-	-	-	-	-	9.7	-	-	-	-	-	1.6	-	-	-	-	-	-	-	-	
745	8.6	13	13.3	5.2	14.7	14	6.7	1.6	16.9	17.8	6 J	1.9	20.1	16.4	9.9	2.7	-	-	-	-	
745	-	-	-	-	-	14.2	-	-	-	-	-	-	-	16.5	-	-	-	-	-	-	
746	7.9	9	3.7	1.5	9.3	8.5	2	0.34 U	10.4	12.2	4.3	0.69	10.1	13.2	3.8	0.64	-	-	-	-	
746	-	-	-	-	-	-	-	-	-	10.8	-	-	-	-	-	-	-	-	-	-	
756	11.1	13.8	3	3.2	2.1	12.1	3	1.7	15.6	11.8	4.5	2.3	20.7	15.9	10.3	3.5	-	-	-	-	
756	-	-	-	-	-	12.1	-	-	15.2	-	-	-	-	-	-	-	-	-	-	-	
413	8.1	12.1	5.8	1.7	10.1	13.2	6.8	2.6	11.4	11.2	5.2	2.2	12	15	2.1	3.8	-	-	-	-	
413	-	-	-	-	-	-	-	-	10.6	-	-	-	12.2	-	-	-	-	-	-	-	

Notes:
 "- inches below ground surface; "-" - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address	Property ID	Lead (mg/kg)																			
		A				B				C				D				E			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	440	259	149	324	87.9	161	201	108	199	341	643	144	102	33.8	106	76.4	22.9	-	-	-	-
	440	-	-	-	-	187	-	-	-	-	929	-	-	-	-	-	-	-	-	-	-
	005	632	89.6	65.5	18.7	345	213	17.6	24.2	274	290	18.4	17.3	342	153	25.8	16.7	-	-	-	-
	005	-	-	-	-	-	-	-	21.5	-	-	-	-	-	-	-	18.7	-	-	-	-
	046	393	221	1,150	20.5	216	142	97.3	24.8	145	150	73.2	29.9	169	122	38.1	44.4	-	-	-	-
	046	-	-	-	-	314	-	-	-	124	-	-	-	-	-	-	-	-	-	-	-
	062	162	155	115	84.3	370 J	137	139	75	313	97	213	127	336	217	111	22.5	-	-	-	-
	062	-	-	-	-	292	-	-	-	-	-	-	-	320	-	-	-	-	-	-	-
	063	380	313	113	82.9	625	355	85	213 J	121 J	155	139	117	71.4	62.3	67.5	48	-	-	-	-
	063	-	-	-	-	-	-	-	-	103	-	-	-	-	-	-	-	-	-	-	-
	869	151	73.1	140	52.8	282	98.2	158	48.6	130	142	78.8	54.6	172	138	120	99.2	-	-	-	-
	869	-	-	-	-	-	-	-	-	142	-	-	-	-	166	-	-	-	-	-	-
	546	185	261	125	32.4	200	312	72	52	61.7	65.5	68.7	111	349 J	797	44.1	63.1	-	-	-	-
	546	185	-	-	-	-	-	-	-	-	-	-	-	296	-	-	-	-	-	-	-
	067	206	99.6	316	143	103	88.9	92.1	68.8	100	108	124	59.8	207	177	153	46.3	-	-	-	-
	067	-	-	-	-	-	-	93	-	-	-	-	-	-	-	135	-	-	-	-	-
	844	294	145	23	14.3	30.8	43.9	51.5	13.7	28.2	24.4	96.9	34.5	617	964	54.5	17.9	-	-	-	-
	844	-	-	-	-	42.3	-	-	-	31	-	-	-	-	-	-	-	-	-	-	-
	070	113	67.1	43.6	17.3	111	96.7	90	20.8	464	244	150	110	472	133	71.2	56.9	-	-	-	-
	070	-	-	-	-	-	-	-	-	577	-	-	-	-	-	-	-	-	-	-	-
	071	205	169	83 J	68.6	161	146	137	140	243	263	131	96.2	283	341	104	71.7	-	-	-	-
	071	-	-	40.6 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	076	93.5	119	36	25.9 J	116	82.4	94	14.6	194	124	43.5	14.3	114	156	64.7	15.1	-	-	-	-
	076	-	-	-	-	-	-	-	-	-	-	-	-	122	-	-	-	-	-	-	-
	081	262	212	39.1	31.1	1,850	238	46	26.5	307	752	76.5	55	217	340	69.6	25.6	-	-	-	-
	081	-	-	-	-	-	-	-	-	-	163 J	-	-	-	-	-	-	-	-	-	-
	085	87.7	58.7	89.8	80.4	49.1	45.2	90.2	47.4	63.1	43	72.9	42.6	76.2	110	134	19.5	-	-	-	-
	085	-	-	-	-	-	-	-	-	-	-	-	-	65.3	-	-	-	-	-	-	-
	087	1,020	219	68.7	33.9	682 J	211	93.6	69.6	146	151	137	55.7	248 J	189	80.3	58.4	-	-	-	-
	087	-	-	-	-	1,140 J	-	-	-	-	-	-	-	238	-	-	-	-	-	-	-
	563	300	426	88.8	38.5	495	1,340	403	355	465	227	66.1	41.3 J	317	171	43.5	66.6	-	-	-	-
	563	-	-	-	34.2	-	-	-	-	-	-	-	63.2 J	-	-	-	-	-	-	-	-
	097	39.4	56.8	160	95.3	108	276	141	72	65.6	76.9	80.1	127	255	160	47	71.4	-	-	-	-
	097	-	-	145	-	-	-	-	-	-	89.4	-	-	-	-	-	-	-	-	-	-
	098	364 J	364	127	42.5	486	227	106	34	368	249	175	23.2	232	213	143	101	-	-	-	-
	098	428	-	-	-	-	-	-	-	-	220	-	-	-	-	-	-	-	-	-	-
	099	108	128	123	26.3	92.7	186	94.7	27.9	191	251	60.1	34.3	200	184	104	95.2	-	-	-	-
	099	-	-	-	-	124	-	-	-	-	-	-	-	204	-	-	-	-	-	-	-
	101	190	105	42.6	37.4	105	119	86.5	41	564	322	433	335	368	277	176	132	-	-	-	-
	101	-	-	-	-	99.9	-	-	-	-	376	-	-	-	-	-	-	-	-	-	-
	843	98.9	95.5	66.9	27.9	211	316	739	124	176	172	192	93.1	288	500	269	196	-	-	-	-
	843	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	144	-	-	-	-
	571	121	162	242	500	119	73.1	44.1	39.8	103	141	46.9	67.3	150	1,070	150	50.8	-	-	-	-
	571	135	-	-	-	-	-	43.4	-	92.8	-	-	-	152	-	-	-	-	-	-	-
	106	205	191	118	93	223	193	152	171	181	269	87.7	44.4	165	139	57.9	32.7	-	-	-	-

Notes:
 - inches below ground surface; "-" - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address	Property ID	Lead (mg/kg)																			
		A				B				C				D				E			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	106	-	-	-	-	248	-	-	-	-	-	117	-	-	-	-	-	-	-	-	-
	574	83.6	110	124	213	107	114	109	69.2	80.5	97.3	55.1	47.9	99.1	72.4	40.5	18.5	-	-	-	-
	574	-	-	-	-	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	116	25.8	37.7	31.1	116	143	72.8 J	59.8	84.7	94.1	110	51	78.3	66	143	214	371	-	-	-	-
	116	-	-	-	-	290 J	-	-	-	-	-	161	-	-	-	-	-	-	-	-	-
	120	66.8	95.4	106 J	150	165	313	589	293	87.1	80.5	47.2	47.8	163	1,320	152	171	-	-	-	-
	120	-	-	159 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	820	61.5	48.4	152	320	74.5	57.6	118	143	125	205	200	369	116	156	479	270	-	-	-	-
	591	174	65.9	27.2	20.1	77.9	39.4	25.5	13	101	41.1	18.7	14.5	90	33.9	32.4	17.2	-	-	-	-
	591	175	-	-	-	-	-	15.6	-	-	-	-	-	-	-	-	-	-	-	-	-
	135	318	186	51	70.1	237	179	50.6	46.3	452	486	1,020	620	560	866	841	1,010	-	-	-	-
	135	-	-	-	-	-	-	-	-	-	-	515	-	478	-	-	-	-	-	-	-
	138	89.2	121	113	162	121	119	131	99.3	298	194	1,130	246	127	193	264	270	-	-	-	-
	138	-	-	-	-	-	-	-	-	-	-	-	-	167	266	-	-	-	-	-	-
	852	69.2	64.7	111	77.2	70.7	86.1	67.6	50.6	69.4	80.1	83	30.9	114	76.9	35.3 J	18.2	-	-	-	-
	852	72.5	-	-	-	-	78.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	152	63	53.7	51.1	58.6	56	50.7	46.8	82.4	64.8	52.2	55.3	55.9	112	103	53.6	28.3	-	-	-	-
	152	56.2	-	-	-	-	-	-	-	-	-	-	-	79.9	-	-	-	-	-	-	-
	153	49.1	83.2	49.1	23.8	86.2	122	80.8	30.8	58.2	109	69.8	25.3	125	151	78.2	24.2	-	-	-	-
	153	-	-	-	-	-	71.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	157	36.8	75.8	84.8	98.5	60.5 J	18.5	94.8	56	80.2	92.1	82.9	34.5	68.9	72.3	70	30.4	-	-	-	-
	157	-	-	-	85.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	911	145	106	102 J	48.5	157	127	51.3	28.8 J	104	91.6	86.9	47.7	590	206	305	206	-	-	-	-
	911	-	-	-	-	-	-	-	-	-	-	-	-	509	-	-	-	-	-	-	-
	817	1,860	314	54.8	21.7	341	121 J	35.5	20	464	52.1	33.7	14.3	559	271	26.5	14.3	-	-	-	-
	817	-	-	-	-	312	-	-	-	-	53.1	-	-	-	-	-	-	-	-	-	-
	165	73.2	55	37.3	62.8 J	38.9	32	24.8	26.6	30.2	31	25.5	29	30.9	41.2	22	12.8	-	-	-	-
	165	-	-	-	32.8 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	166	73.8	83.4	39	16.1	197	164	78.9	33.3	74.1	45.2	35	48.7	35.4	40.4	36	23.2 J	40.8 J	39.2	31.3	13.5
	166	-	69.5	-	-	-	-	-	-	-	-	-	-	-	-	-	42	-	-	-	-
	600	122	29.3	30.2	12.9 J	33.2	35.2	11	11.1	30.9	31.3	15.1	12.5	31.7	30	17.9	10.7	-	-	-	-
	600	-	-	-	-	-	-	-	-	34.2	-	-	-	-	-	-	18.4	-	-	-	-
	171	33.7	31.7	28.9	9.5	27.4	31.4	11.9	10.2	25.6	34.4 J	30.7	10.5	28.1	31	22.1	10.5	-	-	-	-
	171	-	28.6	-	-	-	-	-	-	-	-	-	-	30.1	-	-	-	-	-	-	-
	174	39.1	35.4	26.3	19.5	33.8	28	33.7	30.5	23.8	26.3	27.5	23.4	35.8	31.1	35.3	18.9	-	-	-	-
	174	-	-	-	-	-	-	-	-	23	-	-	-	-	-	-	-	-	-	-	-
	176	32	39.8	45.6	38.1	50.5	52.2	37.7	33.1	32.5	52.8	60.9	38.7	34	50.8	44.3	41.6	-	-	-	-
	176	38.1	-	-	-	-	-	-	-	-	-	-	-	26	-	-	-	-	-	-	-
	177	38.8	39.7	26.7	33.3	37.9 J	37.5	15.9	15.5	35.9	36.3	34	16.8	42.1	26.8	23.2	19.8	-	-	-	-
	180	45.8	54.3	53.5	43.6	64.4	59.4	61.2	44.9	84.3	126	55	41.7	60.2	49.4	30.8	49.2	-	-	-	-
	180	-	-	-	-	-	57.5	-	-	-	-	-	-	-	49.1	-	-	-	-	-	-
	181	38	39.7	39.7	28.7	47.2	38.8	37	34.9	34.9	26.8	31	30.5	30.2	32.9	41	19.1	-	-	-	-
	183	35.7	33.8	40	40.2	21.8	16.9	35.7	44.8	30.2	27.1	33	32.4	42.9	46.1	43.5	22.5	-	-	-	-
	184	54.6	30.9	48.4	44.3	15.1	24.1	40.1	34.5	21.3	18.2	27.2	41.5	28.8	37.4	46.2	35.1	-	-	-	-
	184	-	-	-	-	-	30.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	186	53.2	68.8	29.3	14.9	81.2	49.4	30.9	17.1	51.4	53.9	41.6	17.8	55.3	50.1	19.7	22.8	-	-	-	-
	186	52.4	-	-	-	-	-	-	-	-	-	-	-	-	25.9	-	-	-	-	-	-
	187	18.9	32.4	39.2	24.7	10.3	40	39.3	22.4	25.6	34.5	29.3	11.8	-	-	-	-	-	-	-	-
	187	-	-	-	-	-	-	-	24.8	-	-	-	-	-	-	-	-	-	-	-	-
	188	48.9 J	48.7	37.7	38.7	29.9	26.7	37.9	36.4	30.2	34.4	30.7	20.5	32.1	33.8	33.7	26.4	-	-	-	-

Notes:
 " - inches below ground surface; " - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address	Property ID	Lead (mg/kg)															
		A				B				C				D			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	188	-	-	-	-	-	-	-	-	36.9	-	-	-	-	-	-	-
	190	51.3	50.1	35.4	19.6	62.2	78.1	26.9	15.5	9.8	59.3	70.2	39.1	35.4	41	50.4	22.7
	190	-	-	-	-	-	-	-	-	54.5	-	-	-	-	-	-	-
	191	23.5	23.6	22.5	17.8	18.8	21.6	40.9	43.9	23.2	36.7	38.6	25	46.7	35.8	31.1	25
	191	-	-	-	-	-	-	-	-	-	33	-	-	-	42.8	-	-
	192	28	53	24.8	26.8	31.6	38.7	26.6	25.9	21.5	18.4	25.1	23.7	54.7	29.3	20.3	17
	192	-	-	-	-	19.9	-	-	-	-	-	-	-	-	-	22.9	-
	193	69.9	62.9	60.9	41.3	63.1	65	53.5	50.2	34.1	31.3 J	27.5	52.3	39.7	49.6	47.9	32.6
	193	-	-	-	-	60.2	-	-	-	-	-	-	-	-	40.7	-	-
	194	31	20.9	17.9	22.1	21.4	22.1	26.2	33.9	27.2	32.2	36.5	31.3	36.3	37.4	26.6	15.4
	194	-	-	-	16	21.8	-	-	-	-	33.5	-	-	-	-	-	-
	195	30.7	48.9	29.2	27.2	33.7	49.9	30.3	18.3	42.1	35.9	12.3	11.9	36.7	35	23.3	13
	195	-	-	-	-	-	-	-	-	-	38.2	-	-	-	-	-	-
	196	17.5	11.5	9.1	18.9	58.5	13.6 J	38.9	43.1	19.3	28.1	29.5	33.2	58.8	37.4	24.8	16.6
	196	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-
	197	27.3	18.1	21	37.4	32.6	35.2	25.2	21.5	34.8	35.9	38	29	48	72.6	41.7	27.4
	197	-	13.7	-	-	-	-	-	-	-	-	-	-	-	61.4	-	-
	199	23.2	22.6	14.7	36.3	52.4	22.9	161	75.1	65.8	48.9	83	47.4	24.6	26.9 J	31.5	35
	199	22.5	-	-	-	-	-	-	68.5	-	-	-	-	-	44.1 J	-	-
	202	28.9	25.6	30.2	15.1	32.6	30.9	26.4	26	26.3	21.8	36	38.1	45.6	35.2	34.9	29.2
	202	-	26.3	-	-	-	-	-	-	24.7	-	-	-	-	-	-	-
	204	32.2	29.9	28.2	19.3	29.6	50.4	33	38	310	147	67.4	67	336	345	173	65.4
	204	-	-	-	-	-	-	-	-	-	-	-	-	-	241	-	-
	206	32.3	32.8	24.7	13.9	36.9	27.5	27.5 J	14.6	41.2	42.4	31.6	15.4	29.7	26.5	20.2	25.6
	206	-	32.5	-	-	-	-	-	-	-	-	-	-	-	-	23.3	-
	207	41	35.2	17.6	16.2	37.2 J	21.7 J	32 J	19.2 J	68.8 J	27.3 J	23 J	16.1 J	47.8	34.1 J	17.9	14
	207	-	35.3	-	-	-	-	-	-	-	29 J	-	-	-	-	-	-
	209	36.6	31.9	32.9	29.6	34.6	37.4	36.6	20.3	21	24.2	36.4	24.3	28.5	26.1	27.3	21.8
	209	38.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.7
	210	27.6	23.2	20.8	31.1	41	21.7	29.1	20.3	35	21	37.3	33.2	39.6	43.8	31.8	26.1
	210	-	-	-	-	34	-	-	-	-	-	-	-	-	-	-	-
	212	34.9	40	26.4	17	38.5	43.2	24.9	22.4	54.3	37.2	26.5	12.7	35	37.1	19.7	12.2
	212	-	-	-	-	38.5	-	-	-	-	-	-	-	-	-	23.1	-
	215	49.9	24.8	38.9	68.8	226	51.9	48.3	44.5	65.8	34.3	48.6	32.2	46.9	20.5	41.8	28.8
	215	-	-	-	-	350	-	-	-	-	-	43.4	-	-	-	-	-
	217	46.2	39.5	21.8	14.3	58.9	35.8	27.8	15.2	38.7	40.9 J	20.7	17.8	42.7	31.5	16.8	15.2
	217	-	-	-	-	51.2	-	-	-	-	-	-	-	-	-	15.4	-
	222	39.7	50.7	64.4	49.7	28.7	31.6	49.7	40.4	34.6	33.7 J	253	81.4	-	-	-	-
	222	-	-	-	-	25.7	-	-	-	-	-	-	-	-	-	-	-
	224	66.1	62	22.8	22.9	69.2	72.6	34.1	23.7	57.1	53	39.7	16.8	67.2	49.6	40.9	24.1
	224	-	-	-	-	-	-	-	-	-	-	38.1	-	-	-	-	-
	225	34.5	32.6	55	34.5	35.7	28.4	36.2	36.6	28.7	30.7	39.2	22.3	50.3	45.5	34.2	25.5
	225	36.2	-	-	-	22.6	-	-	-	-	-	-	-	-	-	-	-
	605	48.4	54.5	48.3	22.9	34.6	41	40.6	20.4	19.4	21.2	71.1	55.5	28	44.9	44	42.5
	605	-	-	-	-	32.5	-	-	-	-	-	-	-	-	-	-	-
	229	43.3	38	25.8	19.4	34.7	50.1	26.6	23.1	50.5	52.5	40.3	18.1	43.2	41.5	39.5	23.9
	229	-	34.5	-	-	39	-	-	-	-	-	-	-	49.5	-	-	-
	232	55.4	187	80.2	71.6 J	20.4	12.8	29.8	56.2	28.3	37.5	39.8	21.1	39.5	32.2	32.7	21.1
	232	-	-	-	127 J	-	-	-	-	-	-	-	-	41.7	-	-	-
	233	40.6	48.6	21.3	18.6	49.4	39.4	22.6	14.5	38.8	37.1	18	32.4	30.9	36.1	21.2	13.4

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
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Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address	Property ID	Lead (mg/kg)															
		A				B				C				D			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	233	-	-	-	-	-	33.4	-	-	-	-	-	-	-	-	-	-
	234	54.6	45.5	40.7	42	77	58.4 J	32.1	27.7	66.8	57.2	43.9	23.2	65.1	50.1	22.3	26.4
	234	-	-	-	-	-	-	-	-	-	-	-	-	58.4	-	-	-
	235	45.9	42.5	31.3	22.8	37.5	37.9	39.3	22.6	46.2	48.3	34.8	25.3	56.6	45.2	24.4	30.4
	235	-	-	-	-	-	36	-	-	-	-	-	-	-	-	-	-
	237	28.8	37.7	40.5	30.4	56.8	37.1	46.3	37.5	75.7	65.8	30	21.5	305	40.8	36.9	32.5
	237	-	-	40.6	-	-	-	-	-	-	-	-	-	69.1	-	-	-
	241	57.1	43.8	23.5	21.6	58	88.3	31.9	36.9	136	106	42.6	29.9	55.5	97.5	43.5	26.9
	241	57.4	-	-	-	-	61.7	-	-	-	-	-	-	-	-	-	-
	243	53	33.9	25.6	19.8	44.6	34.4	17.2	15.9 J	26.6	31	29.7	19.2	40.6	40.5	25	17.3
	243	55.1	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-
	246	51.1	52.8	32.5	17.7	65.1	54.1	36	19.4	55.5	53.1	31	19.1	103	42.4	29.9	18.4
	246	63.3	-	-	-	-	54.3	-	-	-	-	-	-	-	-	-	-
	252	51.6	34.5	32.3	21.6	45.6	37.6	30.9	17.5	36.2	45.6	35.3	14.4	52.9	48.3	32	20.5
	252	-	-	-	-	-	-	17	-	-	-	-	-	60.3	-	-	-
	608	62.8	48.5	21.3	19.4	74.8	59.1	29.6	20.2	61.9	47.3	39.5	16.9	128	59.8	41.2	18.4
	608	55.9	-	-	-	-	-	-	-	61.5	-	-	-	-	-	-	-
	257	39.9	51.9	60.7	57.1	21.1	30.7	51.9	44.4	33.6	42.6	42.6	35.9	32.7	34.2	28.5	17.3
	257	-	-	-	-	21.4	-	-	-	-	-	-	-	39.8	-	-	-
	259	25.9	38.8	51.5	34.5	27.8	41.3	45.9	37.2	20.1	42.4	52.8	35.3	30.6	42.4 J	45.1 J	20.2 J
	259	-	-	-	-	-	-	-	-	-	24.4	-	-	-	-	-	-
	263	56.9	64.7	60.4	27.1	58.1	73.7	46.5	27.5	40.9	56.4	47.2	40.4	64.8	29.7 J	38.2	17.4
	263	-	-	-	-	49.9	-	-	-	-	-	-	-	-	48.9 J	-	-
	266	59.7	59.5	51.5	31.1	70.7	49.9	35.7	45	68.5	73	36.2	35.5	52.6	46.2	24.5	37.1
	266	-	-	-	-	70.9	-	-	-	70.5	-	-	-	-	-	-	-
	268	69.1	51.9	29.6	27.2	73.9	81.4	35.9	32	41.5	52.4	24.6	25	61	64.5	38.2	39
	268	-	-	-	-	-	-	-	-	66.8	-	-	-	-	-	-	-
	270	71.2	49.1	33	23.8	56.9	53.1	37.3	17.2	47.4 J	46.3	32.1	19.3	195	51.8	30.5	31.5
	270	-	-	39.3	-	-	-	-	-	-	-	-	-	-	-	-	56.9
	274	65.1	60.5	50.4	25.1	61.1	57.7	67.9	23.4	71.1	57	30.8	33.9	71.4	62.7	33.8	25.7
	274	-	-	-	-	55.1	-	-	-	-	-	-	-	-	-	-	-
	276	37.4	39.8	17.1	14.6	61.9	44.2	14.4	15.7	56.8	49.8	19.2	29.6	39.3	37.2	18	12.4
	276	-	36.5	-	-	-	-	-	-	63.6	-	-	-	-	44.9	-	-
	279	70.1	54.4	53.5	27.4	88.4	54.8	40.5	28	72.6	74	35.4	25.3	79.7	69.3	33.1	16.9
	279	-	67.4	-	-	-	-	-	-	-	-	-	-	-	35.6	-	-
	290	39.4	46.9	45.2	40.6	31.1	34.5	40.1	33.5	33.2	37.7	30.9	21	28.4	30.6	29.9	18.2
	290	-	-	-	-	36.4	-	-	-	-	-	-	-	-	-	-	-
	292	44.1	33.7	46.2	34.6	50.7	46	47.3	45.7	59.2	53.8	45.2	20.8	43.8	39.3	20.2	12.4
	292	-	-	-	-	-	-	-	50	-	-	-	-	-	-	-	-
	297	33.9	37.5	48.1	32.8	74.3	71.4	37.6	64.2	70.4	130	46.9	41	79	93.4	28.2	35.3
	297	32.5	38.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	299	111	100	63.6	31	65.2	78.4	43.7	42.9	95.2	107	150	81.1	85.7	76.5	254	191
	299	83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	766	272	834	196	631	808	617	596	486	504	193	246	759	429	935	738	223
	766	178	-	-	-	-	-	-	-	-	-	-	-	394	-	-	-
	767	269	596	504	479	279	1,470	435	658	398	299	865	159 J	379	341	688	773
	767	224	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	309	247	183	180	99.6	412	1,520	28.7	19.9	524	777	86.4	138	363	169	125	35.6
	309	240	-	-	-	331	-	-	-	-	-	-	-	-	133	-	-
	310	116	62.1	62.7	29.3	106	85.3	73.1	89.9	75	95	121	135	270	121	358	63.8

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address	Property ID	Lead (mg/kg)															
		A				B				C				D			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	310	-	-	-	-	-	-	-	-	99	-	-	-	-	-	-	-
	618	170	174	107	94.3	328	1,270	191	100	216	342	111	142	342	810	264	94.2
	618	239	-	-	-	-	1,340	-	-	-	-	-	-	-	-	-	-
	312	56.3	71.2	14.8	32.8	115	54.5	47.5	18.6	106	75.7	42.2	55.4	103	138	70.4	28.2
	312	-	-	-	-	106	-	-	-	-	-	-	-	-	-	-	-
	619	244	316	734	248	217	226	407 J	165 J	321 J	345 J	430 J	374 J	306 J	269 J	218 J	267 J
	619	-	-	-	-	-	-	-	-	-	-	-	-	328 J	273 J	-	-
	317	170	308	204	112	191	380	262	155	192	310	205	117	346	392	435	519
	317	-	-	-	-	-	-	-	-	167	224	-	-	-	-	-	-
	319	63.2	61	36.9	33	73 J	65.5	51.2	31.8	47.1	48	31.4	27.1	55	49.4	32.2	22
	319	-	-	-	-	-	62.5	-	-	-	-	-	-	-	-	23.6	-
	320	77.8	50.4	29	21.5	81.6	62.6	38.1	54.9	93.1	72.9	78.4	27.3	137	120	57.8	21.1
	320	74	-	-	-	-	-	-	-	-	-	-	-	136	-	-	-
	323	216	185	173	98.9	166	165	199	240	110	110	95	56.9	155	226	244	221
	323	-	190	-	83.2	-	-	-	-	-	-	-	-	-	-	-	-
	324	255	79.2	603	416	103 J	204	248	72.3	161	801	124	198	313	991	429	377
	324	-	-	463	253	-	-	-	-	-	-	-	-	-	-	-	-
	325	183	125	90.6	405	103	120	86.4	223	108	108 J	218	159	169	170	570	148
	325	-	-	-	-	-	-	-	-	107	-	-	-	-	-	-	-
	326	376	235	400	1,270	227	1,900	1,710	670	339	564	402	219	181	525	656	416
	326	-	-	-	-	-	202	3,100	-	-	-	-	-	-	-	-	-
	859	79.6	54.7	115	1,130	80.3	31.3	38.4	150	47.4	25.1	27.4	17.9	77.5	99.6	148	242
	859	-	-	-	-	133	-	-	-	71.6	-	-	-	-	-	-	-
	329	171	66.6	63.5	105	81.3	32.1	68.2	817 J	62.1	54	396	306	72.6	39.8	95.6	219
	329	-	-	-	-	-	-	-	298 J	-	-	-	-	-	-	-	-
	330	155 J	233 J	80.9 J	26.6 J	88.8 J	107 J	27.7 J	14.6	63.5	58.9	115	71.4	109	69.9	80.9	16.7
	330	-	-	-	-	-	-	-	-	63.3	-	-	-	-	-	-	-
	910	80.4	113	74.1	42	60.6	35.9 J	175 J	261 J	27.2 J	38.1 J	271 J	449 J	196 J	365 J	265 J	67.6 J
	910	-	-	-	-	58.9	-	-	-	-	-	-	-	216 J	-	-	-
	866	50.5	66.8	42.8	21	107 J	108	53.1	19.7	119	110	120	27.9	114	71.9	41.4	21
	866	-	-	-	-	-	-	-	24.3	-	-	-	-	-	-	-	-
	909	140	82.6	51	30.1	94.6	62.8	35	19.8	68.1	55.2	27	19.1	-	-	-	-
	909	-	-	-	-	-	-	-	-	56.7	-	-	-	-	-	-	-
	908	1,110	242	133	248	213	541 J	333	148	172	317	70.9	58.7	483	434	314	87
	908	-	-	-	-	-	607	-	-	-	-	-	-	658	-	-	-
	846	97.6	297	54.1	181	266	201 J	490	4,710	283	51.7	62	11.3	475	203	100	23.6
	846	-	-	-	-	-	123 J	-	-	-	-	-	-	-	-	-	-
	821	155	131	46.6	72.1	161 J	107	62.3	37.8	588	234	67.1	30.4	73	137 J	141	50.4
	821	-	-	-	-	207	-	-	-	-	-	-	-	-	290 J	-	-
	811	30.2	29.3	61.5	23	37.3	26	72.6	39.4	47	204	118	145	24.9	110	52.8	14.9
	811	-	-	-	-	42.6	-	-	-	-	-	-	-	-	-	-	-
	819	46.4	188	676	213	29.1	16.8	241 J	69.5	50.3	23.3	144	1,590	57.4	106	120	125
	819	-	-	-	-	-	-	638 J	-	-	-	-	-	-	-	169	-
	812	39.3	80.6	123	201	59.6	78.6	180	51.1	66.7	70.7	117	26.5	56.4	91.9 J	247	88.1
	812	-	-	-	-	-	-	-	-	-	-	-	-	-	98	-	-
	825	93.3	33.7	24.9	19.4	213	187	404	22.5	116	127	118	204	91.6	75.2	220	1,740
	845	482	94.8	35.2	22.4	417	88.6	35.3	20.4	615	71.1	28	26.4	326	95.5	22.7	19.9
	845	-	-	-	-	425	-	-	-	-	-	-	-	-	86.7	-	-
	352	138	58	37.8	28.2	137	87.6	36.9	32.5	48	185	102	60.5	157	102	68.9	25.4
	352	-	-	-	-	-	-	-	-	-	-	-	-	170	-	-	-

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address	Property ID	Lead (mg/kg)															
		A				B				C				D			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	769	170	109	32.4	13.9	131	76.1	23.6	21.2 J	170	39.9	20.7	17.1	150	57.7	18.4	20
	769	-	-	-	-	-	85.6	-	-	-	-	-	-	-	-	-	-
	827	108	236	32.8	76.7	137	48.9	16.7	16.2	86.6	51.1	28	20.4	77.1 J	86.5	14.6	17.6
	827	-	-	-	-	-	36.9	-	-	-	-	-	-	748 J	-	-	-
	900	82.8	57.7	34.4	10.2	65.2	34.7	40.2	66.2	119	65.5	18.2	12.1	104	52.5	20.8	15.6
	900	-	-	-	-	66.8	-	43.5	-	-	-	-	-	105	-	-	-
	367	161	92.1	56	44.2	137	71.4	63.3	46.4	112	67.2	29.7	18.5	141	107	60.4	29.7
	367	-	-	-	-	-	-	-	-	117	-	-	-	-	-	-	31.2
	653	84.1	30.3	26.2	17.5	102	113	26.4	19.9	171	196	269	77	132	163	228	86.5
	653	85.8	-	-	-	137	-	-	-	-	-	-	-	-	-	-	-
	378	73.1	105	113	43.9	79.2	110	372	87.8	119	150	108	103	268	210	283	161
	378	-	-	-	-	-	-	-	-	-	-	-	-	240	-	-	-
	384	65.3	73	321	386	164	107	80.8	86.2	286	214	206	162	58.6	48.2	108	89.5
	384	-	-	-	-	-	-	-	-	245	-	-	-	-	58.5	-	-
	388	283	205	55.3	141	80.7	35.8	16.1	16.9	287	324	140	77.8	215	275	242	74.2
	388	-	-	-	-	-	-	-	-	373	-	-	-	-	-	-	-
	660	61.9	52.3	81.1	19.3	40	45.1	102	28.5	88.4	31.2	17.6	15.2	171	157	31.9	20.8
	660	-	-	-	-	54	-	-	-	-	-	-	-	-	-	-	-
	389	211	128	63.3	98.7	198	171	181	79.5	98.1	106	120	59.7	109	83.9	129	140
	389	-	-	-	-	-	-	-	-	-	130	-	-	-	-	-	-
	392	333	187	209	39.5	105	101	160	74.1	160	164	70.7	384	198	123	67.6	245
	392	-	338 J	-	-	-	-	-	-	-	-	74.3	-	-	-	-	-
	395	93.1	83.8	39.9	16.2	97.8	73.5	34.1	32.6	72.9	60.4	35.1	1.2 U	68	61.6	28	21.6
	395	-	-	-	-	-	46	-	-	-	-	-	-	-	56.8	-	-
	396	95.8	80.8	52.8	17.8	63.7	60.2	52.3	21.5	60	43.2	27.9	23.6	68.8	60.2	43.7	27.4
	396	-	-	-	-	-	-	-	-	-	-	-	-	-	59.6	-	-
	398	154	54.9	29.2	36.8	87.6	63.5	47.3	43.5	80.9	102	126	99.4	106	98.5	91	54.8
	398	-	-	-	-	-	-	-	-	-	-	-	-	-	103	-	-
	662	53.5	20.7	14.8	49.2	59.6	33.5	36.3	57.8	95.8	104	65.8	28.9	87.4	84.5 J	44.3	33.1
	662	-	-	-	-	-	-	-	-	99.7	-	-	-	-	-	-	-
	777	37.6	59.3	58.5	20.4	46.7	54.6	41	18.8	51.8 J	51.1	22.8	19.2	48.1	52.6	25.7	16.9
	777	-	-	-	-	-	53.5	-	-	-	-	-	-	-	-	-	-
	745	176	44.3	24.9	23.7	124	45.5	17.8	14.1	186	37.3	36.5	21.9	221	56.3	28.1	22
	745	-	-	-	-	-	36.5	-	-	-	-	-	-	-	51.2	-	-
	746	85.1	31.7	16	11	82.8	20.2	12.1	11.7	94.3	30.4	15.4	10.6	104	26.2	24.1	15.2
	746	-	-	-	-	-	-	-	-	-	20.2	-	-	-	-	-	-
	756	109	42	17.5	22.9	15.4	66.3	18.4	13	134	43.2	19.2	13.8	181	63.3	38.9	19.5
	756	-	-	-	-	-	48	-	-	120	-	-	-	-	-	-	-
	413	52.1	24.6	14.7	10.4	101	34.1	14.2	13.5	78.4	34.1	17.6	13.2	93.9	53.4	13.3	22.5 J
	413	-	-	-	-	-	-	-	-	70	-	-	-	101	-	-	-

Notes:
 - inches below ground surface; '-' - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

		Zinc (mg/kg)																			
Property Address	Property ID	A				B				C				D				E			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	440	658	508	743	460	740	761	478	495	1,010	1,330	500	315 J	208	389	553	208	-	-	-	-
	440	-	-	-	-	639	-	-	-	-	1,600	-	-	-	-	-	-	-	-	-	-
	005	1,000	577	344	100	642	830	82.6	116 J	621	522	246	191	833	591	301	90.4 J	-	-	-	-
	005	-	-	-	-	-	-	-	71.7 J	-	-	-	-	-	-	-	171 J	-	-	-	-
	046	688	591	582	121	601	616	550	260	642	684	615	342 J	778	618	287	479	-	-	-	-
	046	-	-	-	-	862	-	-	-	557	-	-	-	-	-	-	-	-	-	-	-
	062	762	892	491	400	1,220 J	1,210	460	241	776	522	579 J	453	936	587	454	121	-	-	-	-
	062	-	-	-	-	928	-	-	-	-	-	-	-	927	-	-	-	-	-	-	-
	063	973	773	705	244	1,650	747	259	526 J	431 J	485	462	303	263	444	402	262	-	-	-	-
	063	-	-	-	-	-	-	-	-	390	-	-	-	-	-	-	-	-	-	-	-
	869	315	191	300	232	340	231	234	177	418	318	184	168 J	590	279 J	279	410	-	-	-	-
	869	-	-	-	-	-	-	-	-	392	-	-	-	-	445 J	-	-	-	-	-	-
	546	803	1,080	826	472	729	860	365	206	265	197	301	384	770 J	1,130	447	307	-	-	-	-
	546	910	-	-	-	-	-	-	-	-	-	-	-	761	-	-	-	-	-	-	-
	067	447	298	620	286	333	245	282	272	315	272	324	222	508	399	257	179	-	-	-	-
	067	-	-	-	-	-	-	282	-	-	-	-	-	-	-	-	276	-	-	-	-
	844	1,700	873	615	106	203	737 J	765	65.2 J	105	79.7	863	363	3,410 J	27,300 J	611	607	-	-	-	-
	844	-	-	-	-	-	233 J	-	-	114	-	-	-	-	-	-	-	-	-	-	-
	070	297	274	185	93.4	327	314	253	104	511	386	343	283	544	201	172	136	-	-	-	-
	070	-	-	-	-	-	-	-	-	690	-	-	-	-	-	-	-	-	-	-	-
	071	568	461	229	164	394	374	566	451	813	547	384	232	725	1,090	308	281	-	-	-	-
	071	-	-	171	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	076	455	602	294	210 J	836	752	322	243	937	503	220	85.3	380	329	283	227	-	-	-	-
	076	-	-	-	-	-	-	-	-	-	-	-	-	393	-	-	-	-	-	-	-
	081	459	512	229	167	1,710	355	144	101	405	374	287	228	302	305	130	87.8	-	-	-	-
	081	-	-	-	-	-	-	-	-	-	362	-	-	-	-	-	-	-	-	-	-
	085	304	223	293	345	215	225	358	343	307	219	332	261	362	432	404	155	-	-	-	-
	085	-	-	-	-	-	-	-	-	-	-	-	-	336	-	-	-	-	-	-	-
	087	833	472	376	204	3,850 J	522	634	540	430	364	278	199	602 J	394	229	304	-	-	-	-
	087	-	-	-	-	6,860 J	-	-	-	-	-	-	-	585	-	-	-	-	-	-	-
	563	1,800	1,500	578	304 J	3,370	8,940	2,400	1,410	3,440	3,480	726	443	747	637	202	348	-	-	-	-
	563	-	-	-	458 J	-	-	-	-	-	-	-	500	-	-	-	-	-	-	-	-
	097	143	228	522	426	309	1,130	568	517	341	378	519	608	595	497	241	287	-	-	-	-
	097	-	-	552	-	-	-	-	-	-	577	-	-	-	-	-	-	-	-	-	-
	098	1,300 J	1,810	544	340	665	586	390	186	572	502	460	105	507	435	239	231	-	-	-	-
	098	1,520	-	-	-	-	-	-	-	-	481	-	-	-	-	-	-	-	-	-	-
099	355	328	314	122	325	615	296	174	435	480	282	286	461	457	456	279	-	-	-	-	
099	-	-	-	-	359	-	-	-	-	-	-	-	460	-	-	-	-	-	-	-	
101	436	400 J	227	160	370	418	310	192	1,330	5,200	9,540	6,050	707	344	234	222	-	-	-	-	
101	-	-	-	-	382	-	-	-	-	5,860	-	-	-	-	-	-	-	-	-	-	
843	400	316	274	201	685	679	743	430	861	1,210	942	416	1,940	2,090	1,010	810	-	-	-	-	
843	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	496	-	-	-	-	
571	398	460	489	571	348	248	193	161	280	319	182	206	366	309	180	125	-	-	-	-	
571	416	-	-	-	-	-	217	-	281	-	-	-	356	-	-	-	-	-	-	-	
106	515	482	327	232	1,230	637	1,470	2,250	731	553	227 J	156	342	244	183	145	-	-	-	-	

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address	Property ID	Zinc (mg/kg)																				
		A				B				C				D				E				
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	
	106	-	-	-	-	964	-	-	-	-	-	216	-	-	-	-	-	-	-	-	-	
	574	349	473	646	595	545	990 J	423	385	355	546	242	197	396	302	222	120	-	-	-	-	
	574	-	-	-	-	689	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	116	119	190	131	491	456	292 J	253	319	348	351	225	293	244	431	711	2,140	-	-	-	-	
	116	-	-	-	-	944 J	-	-	-	-	510	-	-	-	-	-	-	-	-	-	-	
	120	397	507	702 J	639	395	860	1,280	929	226	307	211 J	199	320	1,400	327	333	-	-	-	-	
	120	-	-	978 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	820	314	266	924	1,920	336	181	620	975	406	3,140	1,090	2,920	326	581	6,580	1,290	-	-	-	-	
	591	350 J	339	385	260	302	337	411	321	296	384	429	347	287 J	418	403	289	-	-	-	-	
	591	346	-	-	-	-	-	-	323	-	-	-	-	-	-	-	-	-	-	-	-	
	135	1,080	706	582	391	1,350	969	472	381	1,220	1,660	1,130	1,040	1,830	2,560	6,640	2,990	-	-	-	-	
	135	-	-	-	-	-	-	-	-	-	-	1,060	-	1,750	-	-	-	-	-	-	-	-
	138	481 J	701	691	693	620	615	716	594	5,820	1,530	28,300	5,920	745	1,230	1,580 J	1,660	-	-	-	-	-
	138	-	-	-	-	-	-	-	-	-	-	-	-	869	1,520	-	-	-	-	-	-	-
	852	459	478	642	577	471	726	585	429	480	583	646	466	701	607	401	151	-	-	-	-	-
	852	507	-	-	-	-	653	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	152	335	294	344	355	276	273	259	327	310	273	300	333	421	389	359	211	-	-	-	-	-
	152	302	-	-	-	-	-	-	-	-	-	-	-	426	-	-	-	-	-	-	-	-
	153	348	671	423	290	473	658	478	388	365	529	466	304	555	717	439	179	-	-	-	-	-
	153	-	-	-	-	-	-	491	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	157	224	422	606	597	393 J	122	568	572	492	510	500	457	473	489	544	313	-	-	-	-	-
	157	-	-	-	568	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	911	837	573	389 J	363	556	518	319	239	598	546	524	312	890	5,420	1,190	673	-	-	-	-	-
	911	-	-	-	-	-	-	-	-	-	-	-	-	1,120	-	-	-	-	-	-	-	-
	817	14,900	1,570	966	868	2,270	1,380	1,120	781	2,450	1,110	986	502	2,810	1,620	794	416	-	-	-	-	-
	817	-	-	-	-	2,220	-	-	-	-	1,170	-	-	-	-	-	-	-	-	-	-	-
	165	1,130	805	215	222	178	164	148	132	169	159	149	164	153	206	123	59.7	-	-	-	-	-
	165	-	-	-	176	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	166	244	258	165	85.2	341	287	295	113	349	199	149	213	155	170	159	128	180	176	149	76.5	-
	166	-	192	-	-	-	-	-	-	-	-	-	-	-	-	-	-	190	-	-	-	-
	600	329	181	154	69.2 J	184	224	63.6	57	169	186	125	68.9	180	188	136	60.4	-	-	-	-	-
	600	-	-	-	-	-	-	-	-	188	-	-	-	-	-	132	-	-	-	-	-	-
171	217	203	199	73	199	231	126	76.5	173	244 J	225	77.7	193	215	170	74.8	-	-	-	-	-	
171	-	195	-	-	-	-	-	-	-	-	-	-	-	215	-	-	-	-	-	-	-	
174	124	158	135	106	128	129	162	182	122	141	142	128	168	173	176	135	-	-	-	-	-	
174	-	-	-	-	-	-	-	-	116	-	-	-	-	-	-	-	-	-	-	-	-	
176	146	192	251	194	274	235	214	210	189	256	279	332	240	315	304	291	-	-	-	-	-	
176	161	-	-	-	-	-	-	-	-	-	-	-	191	-	-	-	-	-	-	-	-	
177	255	288	207	225	271 J	253	156	107	245	245	240	154	281	208	196	152	-	-	-	-	-	
180	295	342	336	307	295	334	373	336	380	377	356	286	358	315	267	267	-	-	-	-	-	
180	-	-	-	-	-	362	-	-	-	-	-	-	-	323	-	-	-	-	-	-	-	
181	243	249	263	252	182	224	250	229	171	151	204	207	213	187	247	187	-	-	-	-	-	
183	180	202	248	270	113	87.7	232	312	228	178	222	208	259	294	272	197	-	-	-	-	-	
184	251	161	225	224	84.6	121	189	160	110	100	154	232	185	222	241	233	-	-	-	-	-	
184	-	-	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
186	324	464	199	87.7	468	323	245	143	323	332	303	182	302	311	283	109	-	-	-	-	-	
186	330	-	-	-	-	-	-	-	-	-	-	-	-	-	242	-	-	-	-	-	-	
187	119	237	297	168	69.6	272	286	190	182	249	240	92.4	-	-	-	-	-	-	-	-	-	
187	-	-	-	-	-	-	-	204	-	-	-	-	-	-	-	-	-	-	-	-	-	
188	311 J	335	273	295	200	159	266	244	189	220	225	133	200	179	236	173	-	-	-	-	-	

Notes:
 - inches below ground surface; "-" - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address	Property ID	Zinc (mg/kg)																			
		A				B				C				D				E			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	188	-	-	-	-	-	-	-	-	229	-	-	-	-	-	-	-	-	-	-	-
	190	217	236	218	128	278	300	314	160	45.6	267	274	240	186	200	234	196	-	-	-	-
	190	-	-	-	-	-	-	-	-	256	-	-	-	-	-	-	-	-	-	-	-
	191	126	107	109 J	98.6	126	123	230	249	147	181	194	146	183	177	171	165	-	-	-	-
	191	-	-	-	-	-	-	-	-	-	177	-	-	-	201	-	-	-	-	-	-
	192	135	142	141	170	130	151	175	180	94.2	81.7	170	170	129	117	130	96	-	-	-	-
	192	-	-	-	-	101	-	-	-	-	-	-	-	-	-	-	165	-	-	-	-
	193	329	310	245	270	258	312	235	265	189	140 J	177	282	232 J	299	254	261	-	-	-	-
	193	-	-	-	-	249	-	-	-	-	-	-	-	255	-	-	-	-	-	-	-
	194	222	101	98.1	164	126	104	142	174	142	137	180	144	212	186	155	84.3 J	-	-	-	-
	194	-	-	-	96.5	117	-	-	-	-	166	-	-	-	-	-	-	-	-	-	-
	195	221	307	213	178	217	244	191	113	221	206	90.8	72.4	179	201	151	83	-	-	-	-
	195	-	-	-	-	-	-	-	-	-	221	-	-	-	-	-	-	-	-	-	-
	196	85.4	56.6	44.6	97	392	59.9 J	180	201	109	167	181	184	203	236	171	105	-	-	-	-
	196	-	-	-	-	-	-	-	-	-	-	186	-	-	-	-	-	-	-	-	-
	197	138	101	132	249	188	211 J	148	151	199	220	227	182	242	244	193	126	-	-	-	-
	197	-	81.6	-	-	-	-	-	-	-	-	-	-	-	239	-	-	-	-	-	-
	199	146	126	68.5	245	217	97	520	342	223	178	368	252	134	129 J	174	192	-	-	-	-
	199	137	-	-	-	-	-	-	314	-	-	-	-	-	217 J	-	-	-	-	-	-
	202	131	118	132	93.6	123	148	124	113	116	131	247	204	209	173	189	176	-	-	-	-
	202	-	125	-	-	-	-	-	-	-	126	-	-	-	-	-	-	-	-	-	-
	204	187	164	161	125	130	630	199	949	389	195	164	241	263	200	187	177	-	-	-	-
	204	-	-	-	-	-	-	-	-	-	-	-	-	-	201	-	-	-	-	-	-
	206	194	211	175	85.8	202	147	172 J	102	148	189	154	78	169	177	152	130	-	-	-	-
	206	-	205	-	-	-	-	-	-	-	-	-	-	-	-	139	-	-	-	-	-
	207	290	244	154	90	219 J	113 J	194 J	98.4 J	168 J	178 J	161 J	92.9 J	241	205 J	116	74	-	-	-	-
	207	-	250	-	-	-	-	-	-	-	173 J	-	-	-	-	-	-	-	-	-	-
	209	156	174	186	167	165	209	181	137	130	135	159	147	137	131	127	139	-	-	-	-
	209	174	-	-	-	-	-	-	-	-	-	-	-	-	-	-	149	-	-	-	-
	210	127	119	124	161	139	121	161	108	180 J	120	182	203	199	196	166	150	-	-	-	-
	210	-	-	-	-	-	161	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	212	189	208	170	87.5	205	218	169	140	215	203	166	108	189	222	147	75.7	-	-	-	-
	212	-	-	-	-	-	201	-	-	-	-	-	-	-	-	162	-	-	-	-	-
215	262	164	211	796	189	185	159	210	264	395	257	170	234	122	239	168	-	-	-	-	
215	-	-	-	-	189	-	-	-	-	-	205	-	-	-	-	-	-	-	-	-	
217	275	263	168	105	218	193	188	116	236	235 J	135	95.5	269	236	114	84.8	-	-	-	-	
217	-	-	-	-	216	-	-	-	-	-	-	-	-	-	98	-	-	-	-	-	
222	221	253	374	315	164	183	259	298	231	193 J	277	287	-	-	-	-	-	-	-	-	
222	-	-	-	-	149	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
224	345	359	212	163	410	413	287	199	317	290	223	128	354	316	305	154	-	-	-	-	
224	-	-	-	-	-	-	-	-	-	-	253	-	-	-	-	-	-	-	-	-	
225	221	219	391	245	189	190	265	250	174	192	249	190	263	287	244	191	-	-	-	-	
225	213	-	-	-	-	147	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
605	292	345	336	141	210	265	292	142	111	126	423	358	190	301	314	263	-	-	-	-	
605	-	-	-	-	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
229	302	276	205	115	252	381	220	180	337	356	292	122	273	303	274	174	-	-	-	-	
229	-	260	-	-	-	278	-	-	-	-	-	-	280	-	-	-	-	-	-	-	
232	501	2,080	607	584	100	65.1	192	291	153	200	243	154	244	197	195	146	-	-	-	-	
232	-	-	-	774	-	-	-	-	-	-	-	-	252	-	-	-	-	-	-	-	
233	227	311	195	143	271	212	152	65.5	186	188	119	109	154	181	140	76.9	-	-	-	-	

Notes:
 - inches below ground surface; -/- No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

		Zinc (mg/kg)																			
Property Address	Property ID	A				B				C				D				E			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	233	-	-	-	-	-	196	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	234	342	376	322	316	544	433	277	179	433	384 J	296	141	404	351	203	164	-	-	-	-
	234	-	-	-	-	-	-	-	-	-	-	-	-	375	-	-	-	-	-	-	-
	235	322	347	266	175	281	315	322	155	362	377	304	202	411	334	215	227	-	-	-	-
	235	-	-	-	-	-	284	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	237	166	220	268	245	230	160	329	275	383	379	281	196	326	230	223	148	-	-	-	-
	237	-	-	268	-	-	-	-	-	-	-	-	-	-	337	-	-	-	-	-	-
	241	398	346	193	129	290	348	228	268	336	318	276	181	249	311	271	155	-	-	-	-
	241	404	-	-	-	-	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	243	338	277	167	119	315	234	114	105 J	159	210	215	111	244	247	177	103	-	-	-	-
	243	335	-	-	-	-	-	-	-	-	218	-	-	-	-	-	-	-	-	-	-
	246	234	230	152	99.7	328	316	210	111	269	267	187	80.3	386	270	206	87	-	-	-	-
	246	272	-	-	-	-	268	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	252	303	210	187	169	267	196	175	92.6	204	234	188	129	265	240	181	142 J	-	-	-	-
	252	-	-	-	-	-	-	-	87	-	-	-	-	307	-	-	-	-	-	-	-
	608	336 J	255	169	152	328	263	158	153	270	221	206	110	310	195	191	107	-	-	-	-
	608	309	-	-	-	-	-	-	-	265	-	-	-	-	-	-	-	-	-	-	-
	257	227	284	336	320	125	175	287	261	179	216	242	219	167	179	146	75.2	-	-	-	-
	257	-	-	-	-	127	-	-	-	-	-	-	-	-	197	-	-	-	-	-	-
	259	138	225	299	222	152	211 J-	236	232	111	141	224	209	152	188 J	213 J	130 J	-	-	-	-
	259	-	-	-	-	-	-	-	-	-	117	-	-	-	-	-	-	-	-	-	-
	263	255	349	356	219	330	384	234	171	210	279	242	233	314	192	233	104	-	-	-	-
	263	-	-	-	-	271	-	-	-	-	-	-	-	-	259	-	-	-	-	-	-
	266	374	342	310	184	338	279	209	257	332	314	240	191	284	317	213	262	-	-	-	-
	266	-	-	-	-	350	-	-	-	329	-	-	-	-	-	-	-	-	-	-	-
	268	403	342	177	111	208	440	256	194	235	326	219	186	341 J-	319	250	236	-	-	-	-
	268	-	-	-	-	-	-	-	-	335	-	-	-	-	-	-	-	-	-	-	-
	270	361	342	241	89.3	265	228	182	83.3	219 J	199	199	82.8	436	251	190	161 J	-	-	-	-
	270	-	-	316	-	-	-	-	-	-	-	-	-	-	-	-	285 J	-	-	-	-
	274	320	311	276	132	248	246	201	105	283	243	182	120	273	262	166	133	-	-	-	-
	274	-	-	-	-	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
276	210	302	148	94.9	365	330	119	90.4	275	281	140	171	187	209 J	107	65	-	-	-	-	
276	-	290	-	-	-	-	-	-	298	-	-	-	-	208	-	-	-	-	-	-	
279	323	276	254	129	358	256	191	162	319 J	232	127	92.6	278	274	182	74.6	-	-	-	-	
279	-	309	-	-	-	-	-	-	-	-	-	-	-	-	183	-	-	-	-	-	
290	172	264	218	227	163	187	197	200	194	225	181	133	171	214	207	124	-	-	-	-	
290	-	-	-	-	-	189	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
292	234	179	206	237	244	235	245	246	263	266	266	196	284	281	186	71.7	-	-	-	-	
292	-	-	-	-	-	-	-	-	277	-	-	-	-	-	-	-	-	-	-	-	
297	170	214	274	204	169	241	202	302	324	367	259	253	247	329	222	204	-	-	-	-	
297	148	222	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
299	371	536	331	193	331	403	241	212	268	298	331	227	305	281	346	250	-	-	-	-	
299	321	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
766	1,290	5,270	1,490	2,150	1,720	2,240	1,490	1,570	813	673	615	910	1,240	1,330	2,520	1,560	-	-	-	-	
766	1,190	-	-	-	-	-	-	-	-	-	-	-	1,200	-	-	-	-	-	-	-	
767	1,030	2,050	3,770	800	945	4,800	1,160	2,890	2,100 J	793	976	519	690	959	1,380	2,000	-	-	-	-	
767	1,070	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
309	964	458	329	286	811	945	99.1	87.3	541	1,200	254	268	399	324	304	264 J	-	-	-	-	
309	769 J	-	-	-	941	-	-	-	-	-	-	-	-	264	-	-	-	-	-	-	
310	284	184	186	225	324	242	206	322	225	272	279	378	578	371	701	408	-	-	-	-	

Notes:
 - inches below ground surface; "-" - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

		Zinc (mg/kg)																			
		A				B				C				D				E			
Property Address	Property ID	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
618	310									236											
	618	407	336	232	176	604	1,160	328	283	541	630	396	450	623	728	280	268	-	-	-	-
	618	410	-	-	-	-	959	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	312	191	227	70.3	157	352	209	151	97.2 J	362	247	221	195	276	3,340	296	297 J	-	-	-	-
	312	-	-	-	-	276	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	619	888	1,020	1,310	922	986	1,140	2,140	858	1,160	1,100	1,440	1,390	1,810	950	1,200	1,290	-	-	-	-
	619	-	-	-	-	-	-	-	-	-	-	-	-	2,150	986	-	-	-	-	-	-
	317	445	708	535	420	470	686	526	309	699	548	430 J	343	1,460	735	528	720	-	-	-	-
	317	-	-	-	-	-	-	-	-	483	505	-	-	-	-	-	-	-	-	-	-
	319	240	268	238	112	338 J	270	206	124	211	232	159	105	248	237	181	136	-	-	-	-
	319	-	-	-	-	-	290	-	-	-	-	-	-	-	-	-	95.4	-	-	-	-
	320	277	213	196	170	310	273	203	258	338	289	215	116	475	372	251	106	-	-	-	-
	320	277	-	-	-	-	-	-	-	-	-	-	-	447	-	-	-	-	-	-	-
	323	535	667	775	725	672	530	604	529	481	553	470	376	798	841	876	521	-	-	-	-
	323	-	672	-	660	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	324	1,720	522	4,750	1,890	493 J	1,050	1,460	500	1,910	4,060	735	973	1,190	4,310	1,850	1,820	-	-	-	-
	324	-	-	3,830	1,790	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	325	638	437	370	1,320	445	449	384	799	421	414 J	1,200	544	635	605	1,410	955	-	-	-	-
	325	-	-	-	-	-	-	-	564	426	-	-	-	-	-	-	-	-	-	-	-
	326	2,880	2,160	2,810	6,510	1,180	11,400	3,530	4,130	2,240	1,730	4,470	1,020	1,250	2,090	2,980	1,260	-	-	-	-
	326	-	-	-	-	1,200	14,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	859	252	239	473	1,940	250	109	160	556	174	106	198	164 J	261	344	558	658	-	-	-	-
	859	-	-	-	-	341	-	-	-	207	-	-	-	-	-	-	-	-	-	-	-
	329	495	251	297	545	392	200	573	2,130	340	263	2,050	1,250	294	171	403	852	-	-	-	-
	329	-	-	-	-	-	-	-	2,230	-	-	-	-	-	-	-	-	-	-	-	-
	330	1,780 J	1,690 J	843 J	168 J	552 J	582 J	219 J	123	404	368	671	450	310	395	311	132	-	-	-	-
	330	-	-	-	-	-	-	-	396	-	-	-	-	-	-	-	-	-	-	-	-
	910	321	463	524	317	238	149 J	625 J	818 J	135 J	152 J	469 J	1,060 J	830 J	957 J	737 J	696 J	-	-	-	-
	910	-	-	-	-	229	-	-	-	-	-	-	-	973 J	-	-	-	-	-	-	-
	866	196	317	267	138	513 J	1,090	448	136	581	551	750	220	657	470	330	176	-	-	-	-
	866	-	-	-	-	-	-	-	153	-	-	-	-	-	-	-	-	-	-	-	-
	909	881	672	532	266	625	562	414	229	468	443	284	249	-	-	-	-	-	-	-	-
	909	-	-	-	-	-	-	-	-	431	-	-	-	-	-	-	-	-	-	-	-
	908	2,560	671	347	832	443	1,000	994	291	335	601	277	155	843	770	584	264	-	-	-	-
	908	-	-	-	-	-	1,090	-	-	-	-	-	-	920	-	-	-	-	-	-	-
846	1,170	3,630	932	1,560	3,140 J	1,630	6,220	12,500	1,210	726	954	354	5,640	3,860	1,680	277	-	-	-	-	
846	-	-	-	-	-	1,370	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
821	751	704	252	223	686 J	578	277	179	1,280	1,160	416	197	366	561	657	261	-	-	-	-	
821	-	-	-	-	739	-	-	-	-	-	-	-	-	583	-	-	-	-	-	-	
811	238	159	936	1,640	173	184	299	130	168	1,080	306	317	94.9	515	438	119	-	-	-	-	
811	-	-	-	-	260	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
819	272	1,700	15,100	457	124 J	90	782	777	221	222	2,210	7,410	282	478	554	839	-	-	-	-	
819	-	-	-	-	-	-	1,100	-	-	-	-	-	-	-	-	-	-	-	-	-	
812	277	590	818	1,100	403	468	932	603	423	422	892	347	366	478 J	2,040	625	-	-	-	-	
812	-	-	-	-	-	-	-	-	-	-	-	-	-	565	-	-	-	-	-	-	
825	1,440	1,290	629	245	1,870	1,720	3,420	1,360	1,040	1,230	1,080	1,970	728	653	1,860	10,900	-	-	-	-	
845	1,710	1,310	1,390	1,320	1,850	1,400	1,330	919	2,110	1,420	1,210	784	1,350	1,370	1,220	811	-	-	-	-	
845	-	-	-	-	1,890	-	-	-	-	-	-	-	-	1,370	-	-	-	-	-	-	
352	590	441	364	283 J	610	481	445	320	466	809	536	420	728	583	520	310	-	-	-	-	
352	-	-	-	-	-	-	-	-	-	-	-	-	765	-	-	-	-	-	-	-	

Notes:
 - inches below ground surface; "-" - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-3. Laboratory Analytical Results for Properties Greater Than 5,000 Square Feet
Old American Zinc Plant Superfund Site

Property Address		Zinc (mg/kg)																				
		A				B				C				D				E				
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	
[REDACTED]	769	1,040	698	263	115	742	661	434	109 J	1,830	825	355	189	859	642	314	134	-	-	-	-	
	769	-	-	-	-	-	710	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	827	538	997	331	554	607 J	501	301	182	377	608	395	180	464 J	481 J	264	93.2	-	-	-	-	
	827	-	-	-	-	-	498	-	-	-	-	-	-	752 J	-	-	-	-	-	-	-	
	900	417	490	371	147	363	320	351	421	626	533	264	134	530	502	228	150	-	-	-	-	
	900	-	-	-	-	375	-	348	-	-	-	-	-	706	-	-	-	-	-	-	-	
	367	766	502	433	391	456	396	400	251	412	337	253	176	360	402	321	214	-	-	-	-	
	367	-	-	-	-	-	-	-	-	434	-	-	-	-	-	-	-	-	-	-	-	
	653	367	275	337	297	488	573	307	141	671	872	833	653 J	369	582	628	399	-	-	-	-	
	653	368	-	-	-	-	567	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	378	394	557	511	362 J	385	441	528	356	583	593	430	404	986	791	693	415	-	-	-	-	
	378	-	-	-	-	-	-	-	-	-	-	-	-	611	-	-	-	-	-	-	-	
	384	339	300	1,500	1,080	457	303	293	254	897	711	873	613	249	197	330	376	-	-	-	-	
	384	-	-	-	-	-	-	-	-	821	-	-	-	-	250	-	-	-	-	-	-	-
	388	1,300	1,030	318	717	361	175	73.8	73.3	1,100	1,250	697	417	743	1,100	1,150	490	-	-	-	-	
	388	-	-	-	-	-	-	-	-	1,340	-	-	-	-	-	-	-	-	-	-	-	-
	660	440	318	544	99.9	253	371	682	461	615	368	151	95.4	710	680	325	165	-	-	-	-	-
	660	-	-	-	-	362	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	389	461	483	317	576	562	654	957	555	290	393 J	552	331	784	558	746	1,010	-	-	-	-	-
	389	-	-	-	-	-	-	-	-	-	427	-	-	-	-	-	-	-	-	-	-	-
	392	2,460	603	1,520	312	450	466	742	408	687	523	349	1,840	984	752	377	1,320	-	-	-	-	-
	392	-	925 J	-	-	-	-	-	-	-	-	377	-	-	-	-	-	-	-	-	-	-
	395	374	403	259	110	391	379	222	318	358	348	229	7.4 U	376	343	167	97.3	-	-	-	-	-
	395	-	-	-	-	-	-	315	-	-	-	-	-	-	336	-	-	-	-	-	-	-
	396	250	240	238	80.4	262	246	217	120	257	218	143	100	276	239 J	167	114	-	-	-	-	-
	396	-	-	-	-	-	-	-	-	-	-	-	-	-	241	-	-	-	-	-	-	-
	398	307	216	136	231	299	209	193	191	238	311	407	260	290	280	231	125	-	-	-	-	-
	398	-	-	-	-	-	-	-	-	-	-	-	-	-	325	-	-	-	-	-	-	-
662	159	86.9	74.3	189	247	124	182	302	487	414	257	91.6	261	278 J	186	150	-	-	-	-	-	
662	-	-	-	-	-	-	-	-	464	-	-	-	-	-	-	-	-	-	-	-	-	
777	224	516	541	134	396	470	367	115	435 J	456	139	110	402	470	220	114	-	-	-	-	-	
777	-	-	-	-	-	454	-	-	-	-	-	105	-	-	-	-	-	-	-	-	-	
745	464	457	532	421	593	569	538	218	739	696	477	170	835	683	571	255	-	-	-	-	-	
745	-	-	-	-	-	540	-	-	-	-	-	-	-	660	-	-	-	-	-	-	-	
746	412	427	286	108	522	532	291	84.7	473	440	400	119	484	543	413	97.4	-	-	-	-	-	
746	-	-	-	-	-	-	-	-	-	536	-	-	-	-	-	-	-	-	-	-	-	
756	516	442	241	172	91.5	399	254	94 J	533	437	326	143	14,200	484	479	195	-	-	-	-	-	
756	-	-	-	-	-	395	-	-	523	-	-	-	-	-	-	-	-	-	-	-	-	
413	287	369	307	91.7	338	359	343	155	385	379 J	320	124	404	400	148	434	-	-	-	-	-	
413	-	-	-	-	-	-	-	-	372	-	-	-	-	400	-	-	-	-	-	-	-	

Notes:
 "- inches below ground surface; "-" - No data for depth interval or sample section.
 J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram; FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-4. Laboratory Analytical Results for Alleyways
Old American Zinc Plant Superfund Site

Property Address		Property ID	Arsenic (mg/kg)																		
			A			B			C			D			E						
			0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"
	A01	19.6	8	6.6	7.1	12.1	43.2	9.4	7.5	7.4	12.7	12.3	11 J	7.2	11 J	17.8	17.6 J	-	-	-	-
	A01	-	-	-	-	-	10.2	-	-	-	-	-	-	-	-	-	11.6 J	-	-	-	-
	A03	18.3	31.3	20.8	7.5	12.9	71.6 J	6	6	21.8	16.9	8.5	5	14.7	16.3	9.9	6.8	12.8	9.3	8.2	8
	A03	-	-	-	-	-	33.6 J	-	-	16.3	-	-	-	14.5	-	-	-	-	-	-	-
	A04	13.2	12.8	14.6	10.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A05	6.9	12	11.8	6.6	6.1	9.8	11.7	7.6	-	-	-	-	-	-	-	-	-	-	-	-
	A05	-	13.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A06	14.3	23.4	21	14.3	15.2	20.8	14.9	16.1	-	-	-	-	-	-	-	-	-	-	-	-
	A06	-	-	-	-	-	-	12.4	-	-	-	-	-	-	-	-	-	-	-	-	-
	A07	13	7.1	6.9	6.5	19.4	17.3	6.6	6.4	7.1	55.8	5.9	5.1	17.3	32.2	8.8 J	4.9	-	-	-	-
	A07	10.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A08	8.2	7.7	6	6.6	23.2	21.3	7.8	6.5	19.6	17.9	24.6	6.7	18.6	14.5	13	22.3	-	-	-	-
	A08	12.7	-	-	-	-	-	-	-	13.8	-	-	-	-	-	-	-	-	-	-	-
	A10	6.5	24.5	22.2	7.2	17.6	43.9	54.3	10.1	-	-	-	-	-	-	-	-	-	-	-	-
	A10	-	-	-	-	-	38.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A11	4.6 J	20.7	9.3	4.3	7.1	9	64.4	6.2	43.8 J	12.4 J	14.5 J	7.2 J	8.7 J	44 J	30.8 J	8.2 J	9 J	18.9 J	10.6 J	6.6 J
	A11	-	-	-	-	-	-	-	-	73.5 J	-	-	-	-	40.8 J	-	-	-	-	-	-
	A12	12.9 J	23 J	14.3 J	6.8 J	6.1 J	17.3 J	9.3 J	6.5 J	7.8 J	15.5 J	8 J	8.2 J	9.1 J	7.2 J	6.3 J	6.7 J	6.8 J	20.5 J	5.7 J	6.2 J
	A12	-	-	10 J	-	-	-	-	-	-	-	-	-	14.7 J	-	-	-	-	-	-	-
	A13	14.6	13.2	6.6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A13	-	-	8.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A14	8.5 J	15.5 J	7.6 J	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A14	-	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A15	11.8 J	11.6 J	19.5 J	16.2 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A16	9.9	28.1	13.5	9.5	8.7	19.9	6.1	5.3	-	-	-	-	-	-	-	-	-	-	-	-
	A16	-	-	-	-	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A17	5.7	14.5	13.9	7.7	5.8	13.7 J	7.1	7.6	-	-	-	-	-	-	-	-	-	-	-	-
	A17	-	-	-	-	-	6.4 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A18	16.8	9.3 J	8	8.4	16	8.3	6.9 J	6.7	-	-	-	-	-	-	-	-	-	-	-	-
	A18	-	15.7 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A19	17.3	276	13	8	11.6	17.4	6.9	6.9	-	-	-	-	-	-	-	-	-	-	-	-	
A20	4.7	17.4	7.3	6.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A21	9	7.2	7	6.4	7.4	17.1	13.7 J	6.4	-	-	-	-	-	-	-	-	-	-	-	-	
A21	-	-	-	-	-	-	6.3 J	-	-	-	-	-	-	-	-	-	-	-	-	-	
A22	21.6	11.1	8.3	8	18.9	11.2	6.6	7.9	-	-	-	-	-	-	-	-	-	-	-	-	
A22	-	-	-	-	-	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	
A23	10.7	11.9	7.5	8.1	24.8	38.3	14.4	6.7	-	-	-	-	-	-	-	-	-	-	-	-	
A24	18.7	11.3	6.3	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A25	94	17.4	8	9.3	7.3	8.9	14.1	7.4	-	-	-	-	-	-	-	-	-	-	-	-	
A25	-	-	-	-	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A26	10.1	26.1	9.3	25.7	7.3	17.1 J	7.1 J	7.7	-	-	-	-	-	-	-	-	-	-	-	-	
A26	-	-	-	-	-	38.5 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A27	16.4	10.9	9.3	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A09	8.1	9.8	6.8	7.7	7.7	20.1	8.4	7	5.8	63.5	9.6 J	8.1	-	-	-	-	-	-	-	-	
A09	-	-	-	-	-	-	-	-	8.4	-	-	-	-	-	-	-	-	-	-	-	

Notes:
 " - inches below ground surface
 J - No data for depth interval or sample section
 J - The analyte was positively identified; the associa

U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram
 FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded
 Cleanup levels are 239 mg/kg for arsenic, 809 mg/kg for cadmium, 826 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-4. Laboratory Analytical Results for Alleyways
Old American Zinc Plant Superfund Site

Address	Property ID	Cadmium (mg/kg)															
		A				B				C				D			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	A01	5.3	0.81	0.61 U	0.58 U	2.4	2.1	0.63 U	0.59 U	0.56	11.2	1.2	3 J	0.95	14.2 J	8	5 J
	A01	-	-	-	-	-	-	0.62 U	-	-	-	-	-	-	-	16.3 J	-
	A03	14.1	3.8	5.9	1.3	4.1	6.4 J	1.3	1.1	7.6 J	4.5	2.2	2.7	3.7 J	4.3	1.7	1.1
	A03	-	-	-	-	-	4.3 J	-	-	4.8 J	-	-	-	6.7 J	-	-	5.9
	A04	11.6	9.7	5.8	3	-	-	-	-	-	-	-	-	-	-	-	3.3 J
	A05	1.8	14	3.4	7.4	4	8.4	13.7	6.3	-	-	-	-	-	-	-	6.5
	A05	-	16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A06	7.9 J	16.4	11.5	7.5	14.9	13.4	11.3	9.5	-	-	-	-	-	-	-	-
	A06	-	-	-	-	-	-	11.3	-	-	-	-	-	-	-	-	-
	A07	8.2	1.4	0.26 J	0.18 J	13.4	12.1	2.7	1.1	1.1	8.8	2.7	1.2	8.9	3.8	2.1 J	2.1
	A07	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A08	5.7	6.4	4.7	5.2	15.4	19.6	0.93	1.7	16.1	14.7	8.2	3.7	11.3	14	10.6	23.2
	A08	7.5	-	-	-	-	-	-	-	7.8	-	-	-	-	-	-	-
	A10	2.6	16.2	26.1	7.8	8.4	24.6	24.7	5.5	-	-	-	-	-	-	-	-
	A10	-	-	-	-	-	33.9	-	-	-	-	-	-	-	-	-	-
	A11	1.5 J	2.6	2.1	0.68 U	0.99	3.7	7.4	0.68 U	8.1	11.9	10.6 J	3.1	4.1	11.7	18.2	5.4
	A11	-	-	-	-	-	-	-	-	10.5	-	-	-	12	-	-	8
	A12	3.1	5.2	4	3.1	1	5.1	1	0.47 J	0.89	11.4	2.2	0.22 J	1.3 J	1.2	1.3	0.51
	A12	-	-	3.6	-	-	-	-	-	-	-	-	-	6.4 J	-	-	0.36 J
	A13	32.4	38.7	1.1	2.4	-	-	-	-	-	-	-	-	-	-	-	4.4
	A13	-	-	1.7	-	-	-	-	-	-	-	-	-	-	-	-	1.1
	A14	2.1	36.9	2.6	2.5	-	-	-	-	-	-	-	-	-	-	-	0.66
	A14	-	-	7.2	-	-	-	-	-	-	-	-	-	-	-	-	-
	A15	13.6	30.2	10.3	2.2	-	-	-	-	-	-	-	-	-	-	-	-
	A16	7.4	8.1	9.6	5.7	9.9	10.5	1.7	4.5	-	-	-	-	-	-	-	-
	A16	-	-	-	10.4	-	-	-	-	-	-	-	-	-	-	-	-
	A17	0.86	5.1	2.7	0.69	3.6	2.9 J	0.15	0.3	-	-	-	-	-	-	-	-
	A17	-	-	-	10.4	-	1.4 J	-	-	-	-	-	-	-	-	-	-
	A18	10.8	6.5	2.9	0.34 J	5.2	2.4	0.24 J	0.29 J	-	-	-	-	-	-	-	-
	A18	-	6.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A19	14.6	8.7	2.5	3.9	6.2	4.7	1.7	0.58	-	-	-	-	-	-	-	-
	A20	6.6	21.4	11.8 J	0.34 J	-	-	-	-	-	-	-	-	-	-	-	-
	A21	3.6	2.3	1.2	0.25 J	4.6	12.4	4.3	0.49 J	-	-	-	-	-	-	-	-
	A21	-	-	-	-	-	-	3.1	-	-	-	-	-	-	-	-	-
	A22	18.6	19.2	3.3	0.95	10.9	12.1	3.9	2.5	-	-	-	-	-	-	-	-
	A22	-	-	-	-	-	-	-	2.5	-	-	-	-	-	-	-	-
	A23	12.1	8.8	6.8	0.41 J	19.5	53.3	5.8	3.8	-	-	-	-	-	-	-	-
	A24	14	9.7	0.54	0.36 J	-	-	-	-	-	-	-	-	-	-	-	-
	A25	13.6	31.7	1.5	1.1	4.7	7.9	12.5	2.6	-	-	-	-	-	-	-	-
	A25	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-
	A26	17.7	15.4	1.2	12.9	4.6	20.8 J	3.4 J	1.4	-	-	-	-	-	-	-	-
	A26	-	-	-	-	-	43.1 J	-	-	-	-	-	-	-	-	-	-
	A27	15.1	13.1	9.4	0.7	-	-	-	-	-	-	-	-	-	-	-	-
	A09	5.3	12.6	0.33 J	0.57	3.5	15.9	1.7	3.8	5.4 J	4	4.9 J	0.13 J	-	-	-	-
	A09	-	-	-	-	-	-	-	-	2.7 J	-	-	-	-	-	-	-

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mg/kg - milligrams per kilogram

FD - field duplicate

Result equal to or exceeding the cleanup level is shaded

Cleanup levels are 239 mg/kg for arsenic, 809 mg/kg for cadmium, 826 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-4. Laboratory Analytical Results for Alleyways
Old American Zinc Plant Superfund Site

		Lead (mg/kg)																			
Property Address	Property ID	A				B				C				D				E			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	A01	713	30	17.4	14.1	170	226	19.3	15.4	52.7	916	85.9	101 J	73.5	302	371	469	-	-	-	-
	A01	-	-	-	-	-	-	20.4	-	-	-	-	-	-	-	-	354	-	-	-	-
	A03	380	792	1,250	40.6	240	3,720 J	41.6	26.3	243	630	28.2	15.2	325 J	351	66.6	13	269	255 J	32.3	15.5
	A03	-	-	-	-	-	1,530 J	-	-	227	-	-	-	690 J	-	-	-	-	-	-	-
	A04	194	469	484	115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A05	28.1	483	367	32	148	239	241	203	-	-	-	-	-	-	-	-	-	-	-	-
	A05	-	583	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A06	696 J	711	980	1,070	410	438	391	383	-	-	-	-	-	-	-	-	-	-	-	-
	A06	-	-	-	-	-	370	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A07	325	176	14.1	13.7	497	1,210 J	95.5	14.1	27	317	61.6	22.6	477	568	340 J	23.3	-	-	-	-
	A07	360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A08	192	140	35.3	20.2	467	624	92.1	19.7	908	694	273	90.9	1,100	355	266	641	-	-	-	-
	A08	211	-	-	-	-	-	-	-	854	-	-	-	-	-	-	-	-	-	-	-
	A10	25	979	1,560	57.6	530	1,820	7,100	600	-	-	-	-	-	-	-	-	-	-	-	-
	A10	-	-	-	-	-	1,510	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A11	56.3	1,260	205	21.2	142	413	8,240	47.2	2,940 J	356 J	427 J	27.4 J	330 J	499 J	6,940 J	149 J	221 J	326 J	172 J	30.5 J
	A11	-	-	-	-	-	-	-	-	3,900 J	-	-	-	-	727 J	-	-	-	-	-	-
	A12	64 J	455 J	453 J	26.3 J	63.5 J	341 J	162 J	18.3 J	28.3 J	583 J	42.8 J	17.1 J	88.7 J	44.1 J	20.6 J	14 J	18.4 J	289 J	27.7 J	18.5 J
	A12	-	-	319 J	-	-	-	-	-	-	-	-	-	-	766 J	-	-	-	-	-	-
	A13	506	299	16.1	31.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A13	-	-	17.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A14	24.4 J	408 J	53.7 J	23.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A14	-	-	49.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A15	970 J	528 J	507 J	105 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A16	228	877	321	66.2	98	235	16.7	13.9	-	-	-	-	-	-	-	-	-	-	-	-
	A16	-	-	-	96.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A17	13.5	101	129	14.1	25.3	70.4 J	13	14.2	-	-	-	-	-	-	-	-	-	-	-	-
	A17	-	-	-	-	25.7 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A18	176	141	14.7	14	100	56.3	12.7 J	10.7	-	-	-	-	-	-	-	-	-	-	-	-
	A18	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A19	820	6,860	229	53.8	126	332	13.9	11.6	-	-	-	-	-	-	-	-	-	-	-	-	
A20	150	384	76.6 J	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A21	58.4	30.4	18.4	12.2	45.5	170	27.8	13	-	-	-	-	-	-	-	-	-	-	-	-	
A21	-	-	-	-	-	-	20.2	-	-	-	-	-	-	-	-	-	-	-	-	-	
A22	450	175	26.4 J	13.7	286	106	17.2	10.7	-	-	-	-	-	-	-	-	-	-	-	-	
A22	-	-	-	-	-	-	-	12.8	-	-	-	-	-	-	-	-	-	-	-	-	
A23	581	460	53.4	13.1	3,570	2,950	46.1	13.6	-	-	-	-	-	-	-	-	-	-	-	-	
A24	294	123	15	15.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A25	522 J	650	77.8	34.5	88.9	110	514	19.4	-	-	-	-	-	-	-	-	-	-	-	-	
A25	-	-	-	-	98.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A26	358	284	24.3	512	122	224 J	28.5 J	21.3	-	-	-	-	-	-	-	-	-	-	-	-	
A26	-	-	-	-	-	575 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A27	203	178	103	14.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A09	122	141	11.4 J	17.4	31.6	642	64.4	21.8	158	145	235 J	14.3	-	-	-	-	-	-	-	-	
A09	-	-	-	-	-	-	-	-	92.3	-	-	-	-	-	-	-	-	-	-	-	

Notes:
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 '-' - No data for depth interval or sample section
 J - The analyte was positively identified; the associa

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 mg/kg - milligrams per kilogram
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 Result equal to or exceeding the cleanup level is shaded
 Cleanup levels are 239 mg/kg for arsenic, 809 mg/kg for cadmium, 826 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-4. Laboratory Analytical Results for Alleyways
Old American Zinc Plant Superfund Site

		Zinc (mg/kg)																			
		A				B				C				D				E			
Property Address	Property ID	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	A01	1,980	315	272	81.1	405	594	255 J	77.2	171	7,740	390	952	202	1,380	1,520	1,060 J	-	-	-	-
	A01	-	-	-	-	-	-	109 J	-	-	-	-	-	-	-	-	1,560 J	-	-	-	-
	A03	1,280	812	1,840	362	540	3,380 J	272	270	566	548	189	278	481	775	269	283	1,210	481 J	394	375
	A03	-	-	-	-	-	1,650 J	-	-	577	-	-	-	-	678	-	-	-	-	-	-
	A04	941	1,920	940	612	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A05	861	1,800	984	1,170	744	1,370	2,850	1,910	-	-	-	-	-	-	-	-	-	-	-	-
	A05	-	2,320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A06	3,100 J	3,000	3,080	4,420	5,500	10,800	1,770	2,500	-	-	-	-	-	-	-	-	-	-	-	-
	A06	-	-	-	-	-	-	3,440	-	-	-	-	-	-	-	-	-	-	-	-	-
	A07	1,950	359	161	98.6	6,200 J	1,680	439	246	146	2,340	319	192	1,960	743	428 J	320	-	-	-	-
	A07	13,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A08	951	835	739	770	3,130	15,300	275	875	1,820	2,080	1,170	735	8,160	5,420	2,650	6,740	-	-	-	-
	A08	1,790	-	-	-	-	-	-	-	1,420	-	-	-	-	-	-	-	-	-	-	-
	A10	479	3,570	4,020	646	2,510	7,500	14,100	1,190	-	-	-	-	-	-	-	-	-	-	-	-
	A10	-	-	-	-	-	8,490	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A11	997	1,990	740	191	291	1,660	14,800	1,010	6,710 J	9,320 J	9,920 J	1,200 J	1,890 J	1,930 J	11,100 J	921 J	1,470 J	1,750 J	717 J	517 J
	A11	-	-	-	-	-	-	-	-	9,040 J	-	-	-	-	7,480 J	-	-	-	-	-	-
	A12	413 J	1,410 J	1,260 J	947 J	301 J	1,870 J	273 J	128 J	198 J	4,690 J	584 J	146 J	534 J	785 J	267 J	248 J	219 J	1,090 J	305 J	597 J
	A12	-	-	1,400 J	-	-	-	-	-	-	-	-	-	3,500 J	-	-	-	-	-	-	-
	A13	2,290	2,010	187 J	405	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A13	-	-	315 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A14	573 J	3,150 J	506 J	572	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A14	-	-	845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A15	5,340 J	1,920 J	3,440 J	822 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A16	3,560	5,280	917	332	623	1,180	191	755	-	-	-	-	-	-	-	-	-	-	-	-
	A16	-	-	-	768	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A17	222	531	984	257	333	1,140 J	87.9	192	-	-	-	-	-	-	-	-	-	-	-	-
	A17	-	-	-	-	319 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A18	2,020	2,750 J	490	276	789	375	219 J	110	-	-	-	-	-	-	-	-	-	-	-	-
	A18	-	1,430 J	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A19	4,620	12,700	2,160	2,360	1,500	2,390	973	54.7	-	-	-	-	-	-	-	-	-	-	-	-
	A20	2,400	6,260	658 J	88.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A21	587	362	294	201	554	5,800	326	246	-	-	-	-	-	-	-	-	-	-	-	-
	A21	-	-	-	-	-	-	311	-	-	-	-	-	-	-	-	-	-	-	-	-
	A22	11,300	3,170	438 J	591	2,730	1,590	464	572	-	-	-	-	-	-	-	-	-	-	-	-
	A22	-	-	-	-	-	-	-	558	-	-	-	-	-	-	-	-	-	-	-	-
	A23	4,580	3,740	971	197	13,600	16,500	1,640	964	-	-	-	-	-	-	-	-	-	-	-	-
	A24	6,100	1,070	134	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A25	4,540 J	7,090	496	811	1,280	678	2,160	690	-	-	-	-	-	-	-	-	-	-	-	-
	A25	-	-	-	-	1,310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A26	1,800	3,280	497	11,500	669	2,690	463 J	397	-	-	-	-	-	-	-	-	-	-	-	-
	A26	-	-	-	-	2,550	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A27	1,890	3,750	858	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	A09	1,040	5,340	149 J	134	552	3,580	323	398	1,000	870	721 J	72.2	-	-	-	-	-	-	-	-
	A09	-	-	-	-	-	-	-	984	-	-	-	-	-	-	-	-	-	-	-	-

" - inches below ground surface
 J - No data for depth interval or sample section
 J - The analyte was positively identified; the associa

U - The analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.
 mg/kg - milligrams per kilogram
 FD - field duplicate
 Result equal to or exceeding the cleanup level is shaded
 Cleanup levels are 239 mg/kg for arsenic, 809 mg/kg for cadmium, 826 mg/kg for lead and 6,400 mg/kg for zinc.

Table F-5. Laboratory Analytical Results for ENTACT Properties and Alleyways
Old American Zinc Plant Superfund Site

Property Address	Property ID	Lead (mg/kg)															
		A				B				C				D			
		0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	028C	501	46	14	-	388	44	22	-	-	-	-	-	-	-	-	-
	029R	630	58	69	-	698	22	81	-	-	-	-	-	-	-	-	-
	043R	475	249	71	-	310	329	219	-	-	-	-	-	-	-	-	-
	077C	510	147	18	-	404	32	66	-	-	-	-	-	-	-	-	-
	081R	823	471	475	-	983	76	100	-	-	-	-	-	-	-	-	-
	095R	553	225	55	-	330	68	141	-	653	100	75	-	337	152	70	-
	105R	323	139	144	-	717	181	95	-	-	-	-	-	-	-	-	-
	110C	364	478	273	-	680	209	132	-	507	247	239	-	870	223	133	-
	123R	990	429	403	-	534	270	60	-	87	63	21	-	280	131	62	-
	139R	850	397	108	-	531	56	40	-	-	-	-	-	-	-	-	-
	151R	524	220	0	-	527	139	151	-	-	-	-	-	-	-	-	-
	152R	310	160	114	-	499	328	268	-	-	-	-	-	-	-	-	-
	155R	371	260	130	-	343	438	194	-	-	-	-	-	-	-	-	-
	169R	233	363	353	-	197	284	613	-	-	-	-	-	-	-	-	-
	181R	341	243	200	-	423	200	132	-	-	-	-	-	-	-	-	-
	200R	240	440	970	73	282	228	23	-	-	65	97	-	130	85	56	-
	232R	197	49	93	-	98	145	782	-	-	-	-	-	-	-	-	-
	234R	409	365	435	-	477	473	188	-	-	-	-	-	-	-	-	-
	250C	642	632	128	-	178	595	216	-	335	440	318	-	113	947	478	-
	252R	91	165	113	-	114	415	133	-	-	-	-	-	-	-	-	-
	259R	307	392	139	-	686	87	82	-	-	-	-	-	-	-	-	-
	273C	97	79	21	-	274	507	336	-	62	22	19	-	16	0	202	-
	274C	101	64	53	-	147	639	137	-	-	-	-	-	-	-	-	-
	282R	367	42	14	-	408	17	0	-	299	163	39	-	266	127	76	-
	348R	141	122	439	-	132	300	64	-	-	-	-	-	-	-	-	-
	358C	305	120	0	-	457	98	0	-	229	14	145	-	30	67	174	-
	361R	0	61	0	-	973	46	60	-	-	-	-	-	-	-	-	-
	366R	114	517	477	-	228	510	315	-	-	-	-	-	-	-	-	-
	378R	444	171	0	-	485	44	25	-	334	101	13	-	86	88	54	-
	398R	908	0	0	-	583	504	263	-	-	-	-	-	-	-	-	-
	435R	159	212	0	-	408	47	50	-	-	-	-	-	-	-	-	-
	436R	271	0	0	-	629	151	64	-	-	-	-	-	-	-	-	-
	439R	82	53	136	-	172	177	723	-	-	-	-	-	-	-	-	-
	443R	181	159	54	-	498	195	23	-	255	26	161	-	286	0	57	-
	467R	123	148	129	-	320	438	32	-	-	-	-	-	-	-	-	-
	AT1-S	179	520	-	15	437	300	-	413	469	752	-	5,300	-	-	-	-

" - inches below ground surface; '-' - No data for depth interval or sample section

mg/kg - milligrams per kilogram

Result equal to or exceeding the cleanup level is shaded. Cleanup levels are 400 mg/kg for lead